OCTOBER 8, 1986 VOLUME 20, NUMBER 40A

COMPUTERWORLD FOCUS

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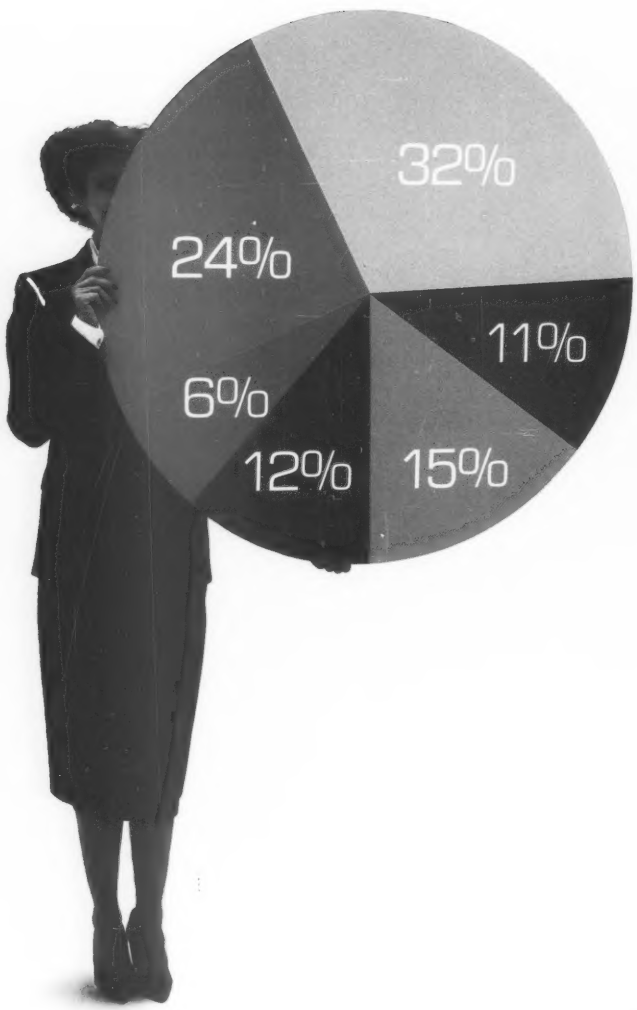

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ABOUT THIS ISSUE

Automating the office has been an important objective for years now. Enormous gains have been made to this end, but even as we advance, the goal seems further away. At times, expanding capabilities, more sophisticated tools and changing organizational needs make us seem as if we're running in place. It is up to MIS to get through this maze of technologies and strategies by using careful, long-range planning and by being aware of the best options.

COVER PHOTO BY GEOFF O'CONNELL

Page 24

FEATURES

What's Worked, What Hasn't 19
Thomas H. Davenport
Companies are recognizing information technology as a valuable resource. Here's what top organizations are doing to build their information strategies.

IBM Takes Aim At The Office Systems Market 21
Michael D. Millikin
IBM is in for a battle in the mid-range market and is looking to the System/36 to make the company a major contender. Will its strategy work?

What To Expect In Integration Strategies 24
Rebecca Hurst
What are some of the top OA vendors doing to update their maturing office systems? Vertical applications and PCs are being added to appeal to the needs of users.

Office Publishing: In With The New 31
Stan Kolodziej
The corporate electronic publishing systems market is hot. The new breed of high-end publishing systems are quickly proving their worth in cost savings and added value.

Hale & Dorr: OA Suits Its Needs 45
Rebecca Hurst
A Boston law firm has become known as an innovator in DP and office systems. Here's how they won their case in selecting an office system.

Good For What Ails You? 47
Paul R. Hessinger
Data base technology is reemerging as a key tool in systems planning and design. MIS is evaluating whether IBM DB2 will be the enabling technology. Here's what DB2 offers and how it can be used for maximum effectiveness.

Integrating Voice & Data 51
John Vacca
A network of integrated voice/data systems exists for workstation users. Find out what's available and how to evaluate what's best.

Page 39

SPECIAL SECTION: INFORMATION CENTERS

Reshaping The Info Center 35
Naomi Karten
Info centers have changed significantly, and they're evolving even more. How have they affected the backlog problem and what will their role be in the future?

Satisfying MIS And Users 39
Richard Makita
The info center manager performs a delicate balancing act to satisfy MIS and end users. How well are managers accomplishing this balance, and how can they establish a better relationship between the two factions? A former info center manager reports.

Searching For The Right Product 43
Stan Kolodziej
Here's a look at what kinds of products some information centers are using and how well they're working.

Page 12

DEPARTMENTS

Editorial 5
Insider 5
Manager's Corner 6
Issues and Answers 8
Reader Viewpoint 10, 11
Letters 11
Q&A 12
News 13
Products 53
Calendar 56

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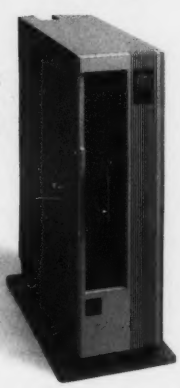

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CIRCLE READER SERVICE NUMBER 104

EDITORIAL

The Mid-Range Battle

The battle concerning the mid-range computer is heating up. Smart MIS managers should start planning their strategies even though a large number of unknowns may still exist.

The rallying cry to evolve beyond single-user systems on personal computers and move to departmental systems is on the upswing in most organizations. As office systems applications continue to move out of the back office and into the front office, departmental computing is emerging as the focal point for organizational and technological planning.

One problem in planning for this approach is the lack of standards or clear technical trends that the user or MIS professional can hold on to. Information systems are gradually moving to incorporate data, voice, text and graphics. This means that in addition to integrating these separate technologies, the different departments and even customer/supplier companies must be connected to one another.

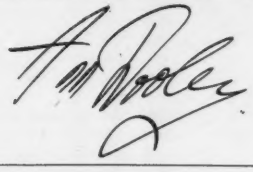
Mid-range products are being viewed as a means of connecting this information and technology. The result would be connectivity of the end user through PCs to the corporate information data base on the mainframe.

IBM has recently been made aware of customer dissatisfaction with Big Blue's lack of substance in its mid-range product line. While it is moving to fill the gap with a System/36-38 strategy, this solution will not happen in the near term. On the other hand, IBM's major competition in this area, Digital Equipment Corp., is offering substantial product value.

But product strategies and offerings are still unclear for anyone trying to outline a product path for a company. MIS is torn, not sure which solution will win out, yet knowing that while it waits for technologies to mature, a competitive advantage could be lost. Connectivity is of critical importance to the success of departmental computing, but MIS is a long way from knowing which issues and technical problems to address.

As connectivity becomes more widespread, information systems solutions will no longer be able to be planned or implemented in isolation. The challenge for MIS will be to integrate the different functions and end-user needs with the developing information systems technology on a departmental level. MIS functions will start to evolve in accordance with these changes in the organization and technologies. Office systems planning and technology evaluation will continue to be under the control of MIS, but some of the implementation will move to the individual departments.

As the technology and informational needs of the organization move away from single-user systems, MIS must make sure it is planning and directing the evolution and is not taken by surprise.



Back To OA's Future

INSIDER
Timothy J. Caffrey

In the 1970s, when life was simpler, office automation had a clear and unchallenged charter. Today, OA, as a market descriptor, a job title or a set of products, appears to have run out of gas. Marketers have shifted their focus from the back to the front office and announced a new allegiance to concepts such as strategic information systems and business solutions. The title of office automation manager holds about as much appeal as an IBM PCjr. And word processing generates as much excitement as the latest version of CP/M.

Perhaps the term office automation should be retired. Perhaps not. It is a semantic argument that will not be resolved here. Such arguments do, however, raise a set of fundamental questions. At the heart of these questions is the issue of whether the work of automating the back office is complete.

The traditional goal of office automation, after all, has been to apply computer-based systems to the task of creating, manipulating and producing textual information. This goal was achieved through the introduction and rapid adoption of the word processor, which in five years wrought revolutionary changes in the look and feel of the back office.

PC knocks the wind out of OA

The personal computer knocked the wind out of OA. PCs captured the imagination of a new and influential group of office workers. Managers, professionals and executives became enamored of what PCs promised to deliver. PCs replaced word processors on the acquisition schedule, spreadsheets and decision support became the applications of choice, and, inevitably, networking and communications topped the "to do" list.

This PC orientation has opened a variety of markets. In doing so, however, it has masked the fact that the job of OA in the back office is far from complete. There is today an unrealized demand for more sophisticated extensions to the text-oriented applications that defined OA through its rise and fall.

If OA originally described the problem of text creation, manipulation and production, it can be extended today to describe the issues of compound document creation and management. The operative words in the new description are "compound" and "management." Together, and within the context of traditional OA products, these words represent significant opportunities.

The strength of demand for compound document capabilities — capabilities that allow text, images and data to be combined in a single document — can be seen in the current fervor surrounding desktop publishing. It is a mistake to assume that long-term demand for desktop publishing capabilities will be driven by the characteristics of either the personal computer or typesetting markets. Instead, desktop publishing is a manifestation of a demand for compound document creation capabilities. As that demand matures, planners must look back to the installed base of OA equipment and skills as the basis for development of successful strategies and products.

The ability to create, manipulate and produce compound documents is technologically immature. So, too, are the products designed to organize and manage the document libraries that will be produced. The current lack of sophistication spells opportunity.

For the most part, document management capabilities have not progressed far beyond simple library management tools tacked on to word processing packages. There is real demand, however, for sophisticated forms management, document storage and search and retrieval systems.

The system features mentioned above are for the most part unsophisticated. Each of them requires new software designs, faster processors, optical storage systems and the savvy to synthesize these components into a cost-effective, easy-to-use package. What is unchanged is the buying motive. Like plain vanilla word processing, compound document production and management targets the inefficiencies of paper based-systems. Using traditional systems as a model, OA might reemerge as the growth market of the 1990s.

Caffrey is vice-president, Office Automation Services, at International Data Corp. in Framingham, Mass.

dB
BY RICH TENNANT
dB ISN'T IN TODAY, BARRY, HE'S HOME SICK.
OH, NOTHING SERIOUS. HE WAS SUPPOSE TO EXPAND OUR OA SYSTEM TO INCLUDE SIX NEW DEPARTMENTS.
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OFFICE AUTOMATION VIEWPOINT

Innovation Can Breathe New Life Into The DP Field

MANAGER'S CORNER
Jim Young

It is increasingly hard for data processing personnel to take a fresh look at their products and how they are produced. Tragically, this problem is most acute in organizations in which this need is most desperate. Perhaps it is time for DP management to employ the concept of innovation in the DP field.

Not everyone will agree that the DP arena is the appropriate place to promote innovation techniques. Opponents would remind us that as the keepers of critical systems, DP staff should exercise controls, checks and balances and disciplines, not unconstrained brainstorming. DP responsibility to a company is in the areas of reliability, routines, procedures and protection, areas that may be compromised by encouraging revolutionary change and provocative new ideas.

However, there is an additional set of DP responsibilities that cry out for innovation, namely, identifying and developing system solutions. Inventiveness here can range from envisioning unique uses of technology to breakthrough approaches to organizational problems.

The advantages of innovation may well justify the effort a department might take to encourage it. The payback from creative solutions can be profound, measured with such potent indicators as market share and return on equity, not merely return on investment.

Even where solutions are not profound or revolutionary, innovative managers can successfully collapse implementation timetables and measurably improve the effectiveness of otherwise routine projects. The qualities developed in an innovative climate are effectiveness, aggressiveness, facilitation, task orientation and responsiveness. Most importantly, people can become thorough and unrelenting problem solvers, looking at old problems in new ways.

To foster this mentality in a DP shop requires a cultural change in a department, the daring to take risks on new ideas and the patience not to overreact to failures. The following list explores some specific actions that can be taken to effect such changes.

• Management. The most important promoter of innovation is supportive management. Management cannot mandate innovation then continually reject ideas and input. To encourage ideas a manager must listen, be tolerant and willing to try something new. Departments will respond to appropriate encouragement by being willing to think expansively and share ideas.

• Rewards. It is not enough just to tolerate ideas. There has to be some way to recognize them and demonstrate an organization's commitment. A pat on the back from management is a good idea but should be just the beginning. Incentives should include not only monetary rewards such as bonus programs but recognition through competitive awards, innovation certificates, innovation fairs and the like. Rewards must not be confined to the most spectacular innovators, either. There should be equal recognition for nice trys and for team players as well, in appreciation of the process of innovation, not merely its good results.

People who assist DP in its quest for innovation should be commended. Implementing novel ideas can be difficult. Team players who help along an idea and support the innovator are critical to fostering an innovative atmosphere. Without them a potential great idea could remain just another dusty blueprint.

• Organization. An important way to ensure that innovation can take root is to nurture it with changes in organization and responsibilities. A whole department cannot always be used as a laboratory; a separate venture team may be created to pursue innovation. Other approaches include creating a DP reserve that can investigate and implement unique opportunities without the normal bureaucracy of project approval.

Along with a repositioned organization must come a realignment of behavior. Management must delegate authority to launch innovative ideas. Moreover, management must refrain from heavy-handed evaluation of which ideas are good and which are not. Management support also involves job structuring and goal setting to provide time and attention to innovation.

• Communication. Innovation within a company must rely on an atmosphere of teamwork and cooperative support. Those trying to make bold ideas work must be met with harmony if possible and, at a minimum, tolerance. Good communication about innovative activity within the organization will breed a sense of involvement and, not insignificantly, spread the mentality of innovation to others. Programs such as innovation workshops, lunchtime sharing and asking for a solution to the "problem of the day" are ways to share with everyone what can be accomplished.

• Team building. Methods to develop a habit of working together may be appropriate and may include special task groups, team building exercises and job trading. The latter might involve systems

See **YOUNG** page 12

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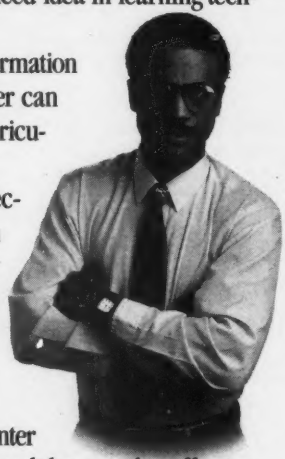

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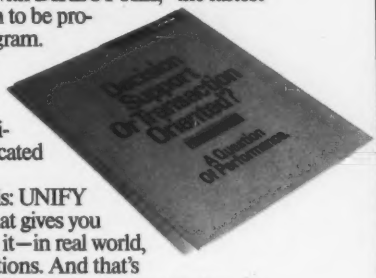

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CIRCLE READER SERVICE NUMBER 115

OFFICE AUTOMATION VIEWPOINT

Learning To Use The Right Measuring Stick

ISSUES AND ANSWERS

Robert D. Gilges

Peat, Marwick, Mitchell & Co. recently participated in a *Fortune* magazine cover story entitled "The Puny Payoff from Computers." It appears that the author found a puny payoff because he was using the wrong measurement stick.

Peat Marwick has helped companies justify their investments in office technology in hard cold cash as well as helped them make competitive gains in their marketplaces. Peat Marwick has rarely found the payoff to be puny.

For example, a company gave each of its top executives an MBO (management by objective) goal to spend five days a month outside of his normal job responsibilities generating new business. Using various office technologies, tasks performed were analyzed during the five days of marketing activities.

Some improvements were minor, like automating expense accounts or customer follow-up files and letters for these frequent travelers. Electronic mail helped solve some of the time zone communication problems. Access to cost data bases and "what if" technology made price quotes more accurate, timely and profitable. Access to divisionwide skill data bases was less frustrating and more beneficial than the old boy network. Ease-of-use graphics packages made presentations faster to produce and made a much better impression on the customer.

The net result of all these "little" improvements was the saving of eight hours a month, approximately less than 5% of an executive's time. One who is accustomed to quantifying puny payoffs would certainly round this improvement down to next to nothing.

But look again.

Eight hours saved is 20% of the five days these senior executives spend on their marketing MBOs. In this scenario, one day was a travel day. Two days, or 16 hours, were spent face-to-face with customers. The eight hours saved through "little improvements" were translated into a third day to spend face-to-face with customers, increasing customer contact time. The executive is also better prepared for selling, has better communication with headquarters, has better tools for presentations and is therefore more effective.

If a company has a top executive who is 10% to 20% more *effective* on a sales call *and* can spend more time dealing with customers, the firm has a strategic competitive advantage. The improvement in such a company's sales line is far from puny.

Changing decision-making behavior

In another client situation, Peat Marwick found senior executives changing their decision-making behavior as a result of technology that was made available to them.

In a traditional office situation, each professional or management-level employee gathers data, filters and sifts it and presents his conclusions to the next higher level of management. In some offices, the alternatives that were dismissed are also discussed briefly but only in the context of straw men that easily fall to further support the main conclusion.

It apparently has mattered little in the traditional office that the people on the bottom of the pyramid who begin the filtering process are the least experienced in business in general, in their specific function and in appreciating the competitive and strategic posture of their company in its marketplace. By the time the information makes it up through the various levels of command, a great deal of data that could conceivably support different options has been removed from the visible data base.

In the traditional office, the white knight is the senior executive with the marketplace savvy who is forced by the pyramid to base many decisions on intuition because there is very little data present. The data that is presented generally supports only one conclusion that may not be practical in the current competitive environment.

So much for the office environment.

Nowadays, employees come to their superiors with recommendations, charts, graphs and data. During the course of the presentation or later, the more knowledgeable superior mounts the data on his PC and quickly analyzes it based on his stronger and broader experiential base.

Think of the improved group dynamics: The employee is learning the boss's insight without waiting for years of experience; the boss is gaining ownership of the data because of hands-on analysis. Recommendations are changed as required by the new insights, the data is retained and a presentation is arranged for the next level of management.

Not surprisingly, managers and directors are reporting that their vice-presidents are adding insights because the raw data is available for their analysis also.

These examples of new office behavior are just emerging because senior executives are now becoming knowledgeable in using the computers that were once reserved for the analyst.

Can we measure this improvement as

See **GILGES** page 12

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CIRCLE READER SERVICE NUMBER 114

OFFICE AUTOMATION VIEWPOINT

Get It In Writing: The Lack Of User-Developed Documentation

READER VIEWPOINT

David B. Phillips

The MIS world is well-known for its mountains of paper; not just printed reports but volumes upon volumes of documentation. Yet, when it comes to end-user-developed systems, it is almost impossible to put your hands on something in writing.

There are many causes to the problem of getting good documentation out of users. First and foremost, it is part of the greater challenge of having personal computer users accept responsibility for the functions they take on when they become microcomputer owners: project leader, analyst, programmer, librarian responsible for backups, computer operator, data administrator, technical writer, job scheduler as well as user/owner. Most PC owners readily accept the benefits of technology but are loathe to assume its duties and responsibilites.

A second source of problems is that few companies have well-written standards for end-user documentation, if any at all. But now, with the maturing of information centers, there is a greater emphasis on tying up loose ends like documentation guidelines.

The contrast in lengths and styles of the documentation standards is worthy of note. Three manuals I reviewed point to elements of both good and bad standards.

The smallest, issued by the micro support unit of American Re-Insurance Co., has eight pages of instructional text and seven of blank forms and examples.

A utility's guidelines contain only four pages of instructions but 72 pages of blanks and examples.

Both these booklets are highly readable and well written.

The third book, which was published by a large life insurance company and also covers testing and error controls, has 32 pages of instructions — 17 on documentation guidelines alone — and 24 pages of blanks and examples. (A contrast in readability: Typical pages in the first two works contain about 225 words while the latter had 310+.)

A third source of problems is the matter of policy and its enforcement. Who is ultimately responsible for ensuring the production of good systems documentation? How can documentation standards be enforced? These questions have plagued information centers and have thwarted either the development or enforcement of documentation policies.

The information center manager of the large insurance company admits that 10% or less of his users adhere to the firm's standards and that while users may be turned off by the size of the company's book, he says, there are more compelling reasons for resistance. "For the most part, users are reluctant to apply mainframe rules to PC applications; they turned to the PC specifically to avoid those rules."

Although the book was published prior to his arrival at the information center, the manager defends its size. "The nature of a financial institution is to be conservative and require more rules and more documentation because of the devastatingly large effect even small errors in systems — or the inability to run them because of someone's absence — can have." He feels that while everyone shares in the responsibilty for user documentation, primary responsibility lies with MIS standards and quality assurance and with DP auditing.

Jane McGuire, info center manager at American Re-Insurance, has a different viewpoint and approach. While the firm's documentation guidelines have been out too short a time to test public acceptance, she is confident that users will read and adhere to them. She says that the key to success, besides the documentation's brevity, is the fact that it was published as a guideline and will be application driven in the way it is used. The more complex the application or the package/language in which it is developed, the more detailed the documentation.

Users attitudes play a major role

Jane adds that her users' attitudes will also help the success of the guidelines. "Our best users have moved away from the attitude that, 'I'm the only one who knows how to work the computer and that gives me job security' to a realization that they eventually will want to be able to pass those applications on to someone else and deal with new, more challenging ones." At American Re-Insurance the information center is also addressing the other problems connected with user documentation. In-house advanced courses will cover documentation as well so that writing documentation becomes part of the routine — like doing backups.

Additionally, the information center staff plans to educate user management about the risks of not having good documentation and, at the same time, pass responsibility for it to them. By clearly stating that documentation goes hand in hand with the system, enforcement is neatly placed in user management's lap.

Phillips is president of David Phillips Associates, Inc., a management consulting firm in New York that specializes in information centers and end-user computing strategies.

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But that's not the half of it. The 2024L comes with four typefaces and the ability to add virtually any other fonts available. It handles a host of versatile print functions. And it profits from a buffer memory plus built-in tractor and optional cut-sheet feeders. With either parallel or serial interfaces, it works with almost every system made. And it helps keep the office blessedly quiet.

Of course, maybe you don't need a printer like the 2024L. But even on a shoe-string budget, you net many of its best features.

The compact Brother M-1509 sizzles with bi-directional printing at a racy 180 cps for drafts...45cps for near letter quality. It credits both serial and parallel interfaces to its features. And, along with most of the 2024L's print functions, it's equipped with a one-inch paper cut function to save paper and a buffer memory to save time.

Dot matrix printers.

And if your budget's even less than a shoe-string, the new Brother M-1109 is for you. Its standard features include both a friction-feed platen and a built-in tractor feed. Like the M-1509, it has dual interfaces and a spectrum of print options. All of which adds up to big system advantages at a small system price.

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CIRCLE READER SERVICE NUMBER 113

OFFICE AUTOMATION VIEWPOINT

The Death Knell Sounds For Office Automation

READER VIEWPOINT
John D. Spinetto

Office automation was ceremoniously pronounced dead during the plenary session of the 1986 Office Automation Conference (OAC) held in Houston earlier this year.

Those who grieve over the pronouncement fail to understand the motivation for its occurrence. They cannot accept that OA has been a major obstacle to effective and efficient information systems. Organizations have considered office automation a separate entity and have not treated it as a key component of corporatewide information systems.

Viewing OA as a separate entity, many organizations assign the responsibility for OA to an office manager. The office manager usually knows as much about information systems planning as the janitor — sometimes less but rarely more. Decisions about word processing, microcomputers, telephone systems and so on are made in isolation of their relationship to information systems.

Not on speaking terms

The data processing manager wants nothing to do with the office manager. As a result, the office manager eventually makes the same mistakes the DP manager made several years ago. The lessons learned through years of experience in planning, designing, developing and implementing DP systems were often lost to the DP manager only to be relearned under the heading of "office automation." The result for an organization is a higher priced solution or, in many cases, no solution at all.

Microcomputers are also relegated to the realm of OA, with decisions regarding these machines made at the department level.

Department-level decisions about micro support are based on personal (individual) needs rather than needs of the department and organization. Multiple micro purchases often lead to local-area network implementations, few of which accomplish anything but to improve the technical competence of the installer. Many organizations are surprised by the eventual cost per workstation (or node) and by the infrequent use of the network. In retrospect, a small multiuser minicomputer may have been the most cost-effective solution for an organization's overall direction in information systems.

Other microcomputer investments made under the umbrella of OA include software development by individuals not qualified to develop software; lost information through failure to back up files and programs; copyright infringement; noncompatible software; expensive micro-mainframe requirements; and so on. Many of these situations can be avoided if the microcomputer resource is viewed from the start as a component of the organizaton's information system strategy.

The information center concept has met with mixed results. Its success often depends on the degree of control inflicted on the user. The information center serves only to delay action, such as in the example of DP shops that install a few micros in their office and then tell potential users, "If you want it, come to us so we can watch you use it."

The success of an information center should be based on how soon it goes away. Eventually, automation tools will be placed in the hands of the user or the person who creates the information to be captured and distributed.

And then there is the office manager who purchases facsimile equipment to expedite the transfer of documents between two company locations. Because it often turns out that the documents were produced by word processing systems, modems and/or conversion programs could have been acquired at less cost to transmit from word processor to word processor.

Even if the facsimile equipment investment is a good idea, the office manager rarely considers the feasibility of using an existing company data communications network for transmitting the facsimile image. Instead, the company will incur thousands of dollars in unnecessary monthly communications costs because facsimile is treated as an OA tool rather than as a contributor to an organization's information systems requirements.

Its time has come

The point being made here is that office automation *was* a good concept, but its time has come. OA as a separate entity results in data that cannot be merged into word processing, micros that cannot communicate with other micros, expensive micro-mainframe alternatives, word processing systems that cannot pass revisable documents to other word processors and so on. All of this has occurred under the noses of DP professionals who should have known better.

The death of office automation heralds hope for truly integrated information systems. Nowadays, organizations are getting DP professionals involved in information systems planning that includes a functional capability once called office automation.

Every silver lining has a black cloud, though. Buzzwords like artificial intelligence, expert systems, desktop publishing and end-user computing may delay effective and efficient information systems as much as the term office automation did.

These terms have their place as *concepts* to be evaluated relative to their contribution to the organization's information systems requirements. If these concepts are treated as independent products, isolated from information systems and entrusted to those who have little if any training or experience in information systems, we create new obstacles.

Spinetto is the senior manager at Ernst & Whinney responsible for the office automation consulting practice of the firm's Southeast region. He has been in the industry for seven years.

LETTERS

Sorting Out The Fourth-Generation Jumble

The editorial entitled "Select Software Wisely" in the July 9 issue of *Computerworld Focus* suggests that fourth-generation languages sometimes fail to fulfill the increased productivity they promise. You're absolutely right.

As the column continues to point out, many MIS managers have unfortunately fallen prey to the "one-size-fits-all" syndrome and try to use a fourth-generation language for something for which it wasn't designed.

The industry now recognizes that there are two major types of fourth-generation languages in today's market, each satisfying different MIS needs.

The majority of today's fourth-generation languages, including relational data base management systems, are information center fourth-generation languages designed to simplify data retrieval for inexperienced end users. Fourth-generation languages of this type provide a hand-holding interface to users and guide them through the development of a report or screen. Because of the intended audience, these fourth-generation languages sacrifice functionality and efficiency in favor of ease of use. They are neither effective nor appropriate for developing full-scale production applications and do not replace third-generation languages.

Information center fourth-generation languages do not materially improve long-term programmer productivity — they were not created to do so. Any MIS manager who purchases one of these fourth-generation languages with programmer productivity in mind will be disappointed.

Development center fourth-generation languages, on the other hand, are designed to simplify and accelerate the task of developing entire production systems. Fourth-generation languages of this class must perform complex screen handling and transaction processing logic, ensure data integrity and support production-oriented file management systems — all within a multiuser environment.

Development center languages assume data processing professionals will be controlling the development process; as a result, their first priorities are power, flexibility and efficiency.

Finally, development center fourth-generation languages feature a report writer with read-only access to system files. This allows programmers to build production reports, confident that end users can build their own ad hoc reports without jeopardizing system data.

Pierre Viau
Manager, public relations
Cognos, Inc.
Ottawa

CIRCLE READER SERVICE NUMBER 110

OFFICE AUTOMATION VIEWPOINT

New Approach Needed In Evaluating Office Systems

An internationally respected authority in the field of advanced office information systems, John Connell is also the founder and executive director of the Office Technology Research Group based in Pasadena, Calif.

In 1977 Connell, a former vice-president of Atlantic Richfield Co., formed this group made up of senior executives from user corporations in the U.S., Canada and the UK to address the management of advanced technologies in the office. The members of this group share what Connell calls "the lessons learned on the firing line."

In a recent interview with Computerworld Focus *senior writer Rebecca Hurst, Connell discussed the purpose and effectiveness of advanced office systems as well as the difficulties users face in evaluating them.*

How would you define office system computing?

Almost any users of machines in an office fall under the umbrella term "office system" users. When usage is voluntary and the user decides when and how to use some technology, it is part of the world of office systems. The exception is those users who are programmers. When people have to key in data based on MIS formats, that's really data processing. They have to use the machine; it's not at their discretion.

How should users evaluate the usefulness of an office system?

Our group [The Office Technology Research Group] has been going since 1977, and what we've learned so far is that the only way you can measure the benefits of an advanced office system is to look at how it improves the effectiveness of the department. In the late '70s the emphasis was on improving individual efficiency. We have learned that this is difficult to evaluate in any meaningful way. Now the emphasis is on organizational effectiveness.

When you go to measure that, you have to ask, "What is the mission of the department? How do I define success and measure that? If I bring in an advanced office system, how does it contribute to success?" The measurement of that is based on how a company measures performance.

For example, and not everyone does it this way, we might ask ourselves what we are trying to accomplish and what hot buttons are going to lead us to success. The issue is not just the money saved. Office systems are tools to help us do our jobs better.

What difficulties do users face in evaluating an office system?

Once you give a person a personal computer, you can never again measure the impact of the machine separate from the person. The computer becomes an extension of the user. Since they are doing intellectual things with a computer, people change the way in which they do their jobs as they realize new ways to utilize the system. That means the effectiveness of an office system is a constantly moving target. It's constantly changing.

What mistakes should users avoid in making their evaluations?

Any effort to evaluate a system in terms of reduced head count or direct labor savings is wrong. It's a far too narrow set of criteria, and the user will end up with an incorrect evaluation. The assumption in some companies was that office systems would save people or time. These systems were not brought in for that. They were brought in to augment the worker's capabilities. If you look at cost savings as the primary goal, you're barking up the wrong tree. The idea is to make the user smarter and expand his intellectual capabilities.

What role do vendors play in a user's office system choice?

Vendors confusing users has gone on for a long time. When vendors sell a product, they always look at the short-term impact, not the long term. The long-term impact is on how a company will do business. The short term is that a company can save 40 hours per week. Vendors will always look at the short term.

Departments would like to look at the long-term impact, but the vendors' proposals all look at the short term. When they go to management and ask for a system, citing the long-term benefits, and management asks them what the vendors have to say about the long-term effect, [departments] have to say, "Nothing." That adds a lot of confusion.

What factors should users consider when adding personal computers to their office systems?

Anyone who looks at a personal computer field on a long-term basis recognizes that they will all be tied into a network. When companies invest in personal computers they ought to realize that. It's not costing them $15,000 for three PCs but $80,000 to network them.

When vendors come in they'll never tell you that when you're buying a personal computer you're also buying five application packages, which cost a lot of money, and training. So the actual cost of one PC is not $5,000, it's $20,000.

Members of the [Office Technology Research Group] talk about what personal computer costs can amount to, and it gets pretty fierce. Training costs are always far more than anticipated. Networking costs are high, but personal computers are going to be connected.

How should a corporation approach the management of office systems?

The management of information technology has two thrusts. One is traditional, centralized MIS. The second is a combined office system information center that provides professional support. This includes personal computer training and support. Both groups have the same level of authority and report to a chief information officer. A third element is telecommunications, which can reside in either group or form a group of its own. If you allow the information center and telecommunications entities to be buried in MIS, you won't be able to provide the kind of support needed in the office.

How is office system computing changing the way in which an office functions?

First, the office system introduces a spirit of innovation. Once people find that they can do certain things with computers, they consciously look for better ways to do their job. The effect of this innovation is very positive and beneficial.

Second, when machines are tied to a network, there are major changes in the communication patterns. People begin to talk to people they had never talked to before. Electronic mail contributes to this. People broadcast a message and others respond who ordinarily would not be involved. The worker discovers who can help him get his job done. So the traditional hierarchy takes a back seat to the real communication structure.

These improved communication paths along with the spirit of innovation lead to improved departmental performance.

Q&A

John Connell

"If the information center and telecom entities are buried in MIS, you won't be able to provide the kind of support needed in the office."

YOUNG from page 6

development professionals assuming operational duties or even data processing personnel becoming users.

• Education. While it may be debated whether you can teach a person to be creative, it is possible to encourage latent creativity through innovation workshops, mentor and coaching programs and implementation techniques like listening skills. These programs may be used as a way to involve everyone in innovation. Innovators should be aware of what competitors are doing, what vendors are doing and what researchers are doing. They should also be alert to improvements in areas outside of data processing. Antennae should always be up but not to copy other ideas. In the mind of a truly creative person, someone else's mundane change can be reworked to become really significant.

It will take a combination of approaches to imbue the the spirit innovation in your organization. Culture and circumstance will determine a firm's particular level of visibility, energy and aggressiveness.

Management resolve is a necessary ingredient to achieve innovative thinking and action in data processing. An emphasis on energy, efforts and thinking can translate into a whole new department attitude that nurtures achievers. Highlighting the importance of contributors and of results can instill in employees a business-oriented work ethic and team spirit.

Young is principal and director of consulting for Authur Young & Co., Worcester, Mass. He has worked in the industry for 15 years.

GILGES from page 8

accurately as we could the increase in customer face time of the executive with part-time marketing responsibility? No.

The problem in quantifying a new office decision-making model is that there is not a convenient interim measure. But quantifying this interim measure is not important. What *is* important is what company management is going to do with this newfound method of decision making.

Businesses that act based on the the new, more data/less intuition decision making model will ultimately outpace the businesses operating in the traditional low-data/high-intuition model.

Some companies introduce office technology on people's desks just because it is there. Other companies study the business mission of each of their departments or generic functionaries and plan how to use the power of the technology to unleash the creativity of the knowledge worker.

One lesson to learn in measuring the impact of technology is to make sure you know what you are measuring. If a company is convinced there is a puny payoff, that is all you will find, and in the meantime, your competitor will be using technology to seek out a competitive niche and leave you in the dust.

Gilges is partner in charge, Information Systems Services Consulting Practice, at Peat, Marwick, Mitchell & Co. in New York.

This article was prepared in conjunction with David L. Shay, a manager in the Operations Management Group of Peat Marwick's New York office.

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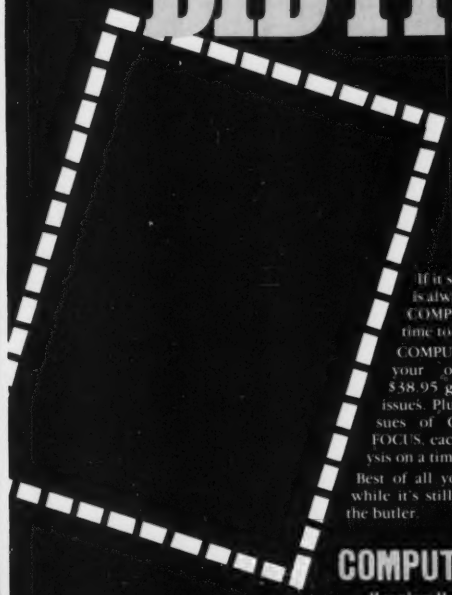

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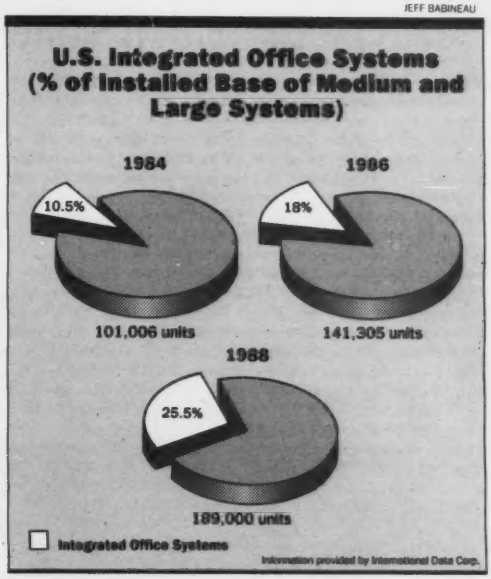
OFFICE AUTOMATION NEWS

OA Active On Many Fronts

JEFF BABINEAU



OA UPDATE

Office automation has been busy on a lot of fronts lately. Although International Data Corp., a Framingham, Mass., research firm, classifies 1986 as a continuing soft market for corporate information systems spending (an 8% to 10% increase over a dismal 1985), vendors are trying everything to get users up to buying speed again.

In the micro arena, what a difference a year makes. Leading software vendors are now flooding the market with new site licensing, volume discounts and support programs. Lotus Development Corp., Microsoft Corp. and Ashton-Tate have given in somewhat to pressure from users and competitors such as Lifetree Software, Inc. and Software Publishing Corp.

Lotus has introduced its Multi-Value Plan, removing copy protection for large-volume buyers, and is providing direct sales discounts for 500 copies or more of its 1-2-3 and Symphony. Microsoft is no longer copy protecting most of its products, while Ashton-Tate has dropped copy protection from all its products and has thrown in full support and service.

Digital Equipment Corp. is also getting into the licensing act. The company said it is trying to save customers money through a unique server-based licensing plan. The plan allows a specified number of users to simultaneously access and select Microsoft MS-DOS applications from a single server. The license applies to each file server rather than each single user.

■

Lotus Development Corp. made news with The Application Connection (TAC), a software line allowing personal computers to extract data from a variety of mainframe applications.

TAC is considered a feather in Lotus's cap because it frees users from having to rekey mainframe data in PC spreadsheets and from writing data extraction programs. TAC also enables data to be uploaded into mainframe data bases and applications. At this point, TAC modules can extract data from a variety of top relational data base mainframe languages.

Lotus got some flack for concentrating TAC within the IBM environment and excluding it from the Digital Equipment Corp. VAX realm. Lotus quickly added that a DEC connection is in the works.

■

The race for the first Intel Corp. 80386-based computer is officially on and a little earlier than expected. Corvus Systems, Inc. fired the first salvo by introducing a $12,000 80386-based workstation and file server in late August. That was answered by Compaq Computer Corp.'s 80386-based Deskpro 386 Models 40 and 130, which provide up to 130M bytes of fixed-disk storage; an internal 40M-byte, fixed-disk-drive backup system; up to 14M bytes of random-access memory; and prices from $6,500 to $8,800.

Not to be outdone, Advanced Logic Research, Inc. is set to introduce a line of 80386-based machines this fall aimed at the computer-aided design and manufacturing and Microsoft Corp. Xenix multiuser marts.

That's just the beginning. The early part of 1987 is expected to see a wave of multiuser 80386-based systems appearing from people like Altos Computer Systems, Inc., Sperry Corp., Convergent Technologies, Inc. and ITT. Exciting stuff for a computer market that many analysts say will be heating up with the mass appearance of the 80386 micros that will put Motorola, Inc.'s 68000 series processors on the defensive. It could even make Microsoft MS-DOS the multiuser operating system of choice in many corporate departments.

■

We can't leave the micro market without a look at desktop publishing, especially because IBM sanctioned the market by creating its Publishing Systems Business Unit in July. One of the only skyrocketing segments in a lackluster computer industry, desktop publishing software is slated by International Data Corp. to grow at a compound annual rate of 43% in revenue between 1985 and 1990.

What's driving the desktop publishing market? The force consists of lower priced micros, better graphics software and the ability to quantify publishing cost savings for MIS.

■

From the big boys has come a new battle cry for integrated systems as the final solution for office automation (see chart this page). Bigger is better in this area. Joining Data General Corp. with its Comprehensive Electronic Office (CEO), Digital Equipment Corp. with its All-In-1, Wang Laboratories, Inc. with its Wang Office and Sperry Corp. with its Sperrylink are integrated systems newcomers like Hewlett-Packard Co. (Personal Productivity Center) and Honeywell, Inc. (Office Network Exchange Plus). Integration here is the name of the game. All of these systems offer ambitious building block components to link OA software over micros, word processors and minis and to link mainframes over multiple departments and over multiple industries. It takes critical mass for a single firm to do it. That's why it's a big vendor game.

Integrated systems vendors have also come to terms with the IBM Personal Computer. Pulling PCs into their systems strategies has been the new factor in integrated systems, according to Molly Upton, International Data Corp.'s Office Automation Reporting Service editor. Vendors are now making the PC user priority one (or two) in integrated systems architecture. DEC's newly introduced PC All-In-1, for example, is a Microvax II-based system that can tie up to 30 IBM PCs and PC compatibles into DEC's All-In-1.

■

A Lexington, Mass., firm is trying to marry Cobol and artificial intelligence. Distribution Management Systems, Inc.'s (DMS) Application Expert is a shell designed to embed expert systems in existing Cobol applications. DMS could help bring AI into the world of commercial mainframe applications. Set to run first on Digital Equipment Corp. VAXs, DMS has scheduled an IBM MVS/CICS version for January 1986, soon to be followed by an IBM Personal Computer version. It won't be an inexpensive wedding. Application Expert will be priced between $55,000 and $125,000.

■

Another marriage might be scheduled, one that could have far-reaching effects on communications in the office.

The Vienna, Va.-based Corporation for Open Systems (COS) was scheduled to meet in September to try and iron out an agreement on universal connectivity of diverse computer systems.

COS is not just another industry group. Its roster includes heavyweights such as Digital Equipment Corp., Data General Corp., IBM and Bell Communications Research. A force rushing the meeting is the sobering fact that 1986 U.S. computer hardware sales will increase only about 7% over 1985. Computer industry fingers are pointing at a lack of good universal communications as one of the key factors behind that particular industry slump.

Also taking the COS vendors to task are some of their large corporate customers like General Motors Corp. and Boeing Co., which have formed a powerful lobbying group within COS to get universal connectivity on the road. Something just might happen this time.

MIT Program Studies Information Technology's Potential

Now in its second year, the ambitious "Management in the 1990s" program at Cambridge, Mass.-based MIT is still aiming to turn U.S. office automation on its head.

Run under the auspices of MIT's Sloan School of Management, the five-year research program consists of 14 projects dealing with topics from expert systems for executives to fiber optics and semiconductor technology.

"These projects are not just academic endeavors," explained John Sifonis, national director of Information Technology Consulting at Arthur Young and Co., which is helping sponsor five of the MIT projects. "We expect to see the results spun off into the commercial area. The entire program is going to have a great impact on how corporations handle computer technology in the future."

Other heavyweight sponsors agree enough to put $5 million in research money into the kitty. The list of sponsors and direct beneficiaries include Digital Equipment Corp., British Petroleum Co., General Motors Corp., American Express Corp., MCI Communications Corp., Bell South Corp., International Computers, Ltd., Eastman Kodak Co. and the Internal Revenue Service.

While some of the projects deal with specific areas like microprocessors, others are more conceptual in nature.

John Henderson, associate professor of Management Sciences at MIT, for example, has assigned for himself and his colleagues no less a task than "the redefining of the entire scope of information systems design using computer-aided techniques."

Henderson sees as an inspiration Ford Motor Co., which surprised its competition when it introduced its successful Taurus line of automobiles sooner than expected.

"Ford radically changed their design structure to produce faster output, and that's what has to be done in the information systems area," Henderson explained. "Right now there is no generic design format that can be applied to most information systems design cycles, only pieces that have to be linked awkwardly together.

"MIS will benefit immensely if a synthetic design workbench can be put in place then customized at each location through knowledge-based techniques. We wanted a wide range of sponsors from various industry sectors to make sure this project applies across the board."

Henderson said his group has first been studying numerous businesses to get an idea of what software design cycles are now being used. He said a report on this field research will be ready at the end of the year that will identify dominant design trends.

"Beyond that, we can begin spinning off practical results," Henderson said.

OFFICE AUTOMATION NEWS

Study: Information Systems Spending Moderate

Moderation seems to describe information systems spending these days. The growth of overall spending in this area in 1986 will only reach 8% to 10%, according to a recent study by International Data Corp. (IDC), a Framingham, Mass., research company.

Corporate users said they expect information system spending to increase a weighted average of 8.1%, IDC reported. The unweighted average, which does not account for budget size, is 8.8%. Vendors, primarily software and hardware companies, were not far off. Their own estimates averaged 9.1%.

The reason for this conservative spending is that in the early '80s users were fairly liberal in their purchasing, said Tom Henkel, senior analyst at the Yankee Group, a Boston market research concern. After acquiring personal computers, minis and mainframes, he noted, "Users have reached a plateau where they are waiting for functionality to catch up with price/performance."

Users' responses to the IDC survey reflect this trend. Among smaller firms, 5% said they expect spending for the third quarter of 1986 to decrease while 29% anticipate an increase. Another 66% expect no change at all.

The projections of larger companies, those with a minimum information systems budget of $10 million, were more conservative; 57% of these firms predicted no change in spending. The other 43% were evenly divided between those that expect to increase or decrease their spending. Managerial attention, the IDC report summarized, is focused on controlling costs while maintaining or increasing the level of service.

The spending strategies also reflect customers' needs to analyze and use what they already have, Henkel noted. Additionally, the surge of spending in the first half of this decade has left companies with as much or more computing power than they require. This is partially responsible for slowed spending on equipment.

DEC Networks IBM PC, VAX

The market for plugging IBM Personal Computers into the Digital Equipment Corp. VAX/VMS environment has been a sleeper until recently.

Think of the potential. IBM lists about three million of their PCs in use in corporate America, while market research firm Dataquest, Inc. puts the figure at more than two million.

On the other side, DEC estimates there are now more than 50,000 VAX systems at 11,000 U.S. sites, with little or no PC networking capability.

To date, however, the VAX and PC environments haven't been married anywhere near their potential by IBM, DEC or third-party vendors.

Until now. In a series of recent product announcements, DEC has come out swinging with products that will extend DEC's strengths in VMS minicomputers and communications to the work group and small department level, said Lee Doyle, senior communications analyst at International Data Corp., Framingham, Mass.

DEC's new Vaxmate IBM Personal Computer AT-compatible workstation has built-in Ethernet connections, and its PC All-In-1 is a Microvax II-based system that can tie up to 30 IBM PCs and compatibles into DEC's All-In-1 environment. DEC has also introduced its Personal Computing Server Architecture, a series of software and communications products that allow IBM PCs and compatibles to access Decnet resources, letting the VAX and Microvax act as information servers.

DEC is "taking aim at the mid-range, departmental computing area," Doyle said. DEC is now "the first to deliver peer-to-peer communications between PCs, network servers and minicomputers. What [the move] does is really expand the size of the DEC/PC market. PC users now have real DEC applications they can use, without working within the limits of terminal emulation," Doyle explained.

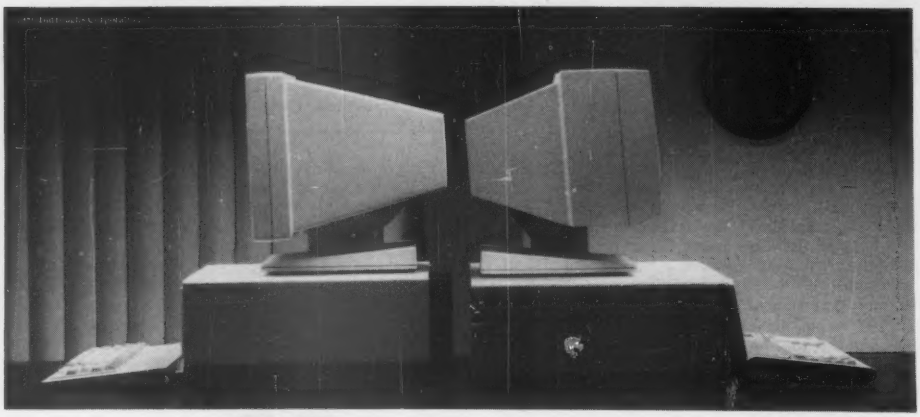
Third-party vendors saw DEC coming, however, and have hurriedly entered the market with products for better VAX/PC connectivity. Two of the leaders in this market, Virtual Microsystems, Inc. and Network Innovations Corp., are trying to stave off DEC's attack: Virtual Microsystems with a network coprocessor that connects PCs on Microsoft Corp. MS-DOS 3.1-compatible networks with VAX and Microvax II hosts; and Network Innovations with a version of its Multiplex that lets PC users transfer Unix data to DEC VMS machines.

There should be enough market for everyone, at least for now. Virtual Microsystems, for example, said there is enough room for a PC/VAX company to reach $100 million in sales by 1990.

CORRECTIONS

Users can program in Unix to back up tapes from an Interleaf, Inc. system as stated but don't have to [*CW Focus*, August 20, page 37]. Interleaf provides a one-line Unix command for this purpose.

Arthur D. Little, Inc. should have been ADL on second reference, not ADR [*CW Focus*, Sept. 17, page 61].



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CIRCLE READER SERVICE NUMBER 103

OFFICE AUTOMATION NEWS

Dynamic Duo of the BUNCH

The merger of Sperry Corp. and Burroughs Corp. has gotten a lot of press the last several weeks, most of it negative. Users questioned Burroughs' commitment to the Sperry product line. Analysts doubted the financial stability of the consolidated company. In the face of these criticisms, representatives from the merging companies have often found themselves on the defensive.

However, the combined corporation has taken the offensive. James Fiedler, vice-president of Sperry's Public Sector Business Group, described how Sperry and Burroughs will form a dynamic duo.

Three factors — size, complementary markets and financial health — will contribute to Sperry/Burroughs' success, Fiedler said. "Together, we form the second largest computer firm in the world. We have 58,000 customer sites and an installed base of over 80,000 systems worth a base value of $30 billion." Also, Fiedler noted, "We're the largest supplier to the federal government, which is the largest customer in the U.S."

Greater R&D resources

This size, Fiedler argued, has brought an economy of scale and greater research and development resources. The companies have a combined R&D budget of $1.3 billion.

Fiedler also said that complementary banking, government, aviation, industrial, geographical and defense markets will give the merged company a diversified installed base.

Beyond these advantages, Fiedler also asserted that the companies are financially viable and assured that Sperry/Burroughs is not planning to drop Sperry products or employees. He also denied rumors about cutting the Sperry line, noting that such action would effectively cut revenue in half. "With this merger, the intention is to maintain lines, maintain people and maintain marketing resources," Fiedler said.

Apparently contradicting this policy, Burroughs has announced that it plans to divest Sperry's Aerospace and Marine Group to help raise the $2.9 billion it needs to fund the $4.8 billion acquisition of Sperry. There is no incongruity, though, said Harvey Poppel, a partner of Broadview Associates, a Fort Lee, N.J.-based firm that mediates information technology mergers and acquisitions. "It's very common in large acquisitions for companies to divest groups from the company they purchase," he said. "For example, Sterling Software, Inc. divested three or four parts of Informatics General Corp."

Burroughs decided to divest this group for two reasons, Poppel said. First, the Aerospace and Marine Group does not fit the combined company's strategic focus on information and defense systems. Second, the sale will reduce the debt incurred by Burroughs' acquisition of Sperry.

"Ultimately, that will help the bottom line by reducing interest costs," Poppel said.

News section compiled by Rebecca Hurst and Stan Kolodziej, Computerworld Focus *senior writers.*

Ford-IBM Pact Said To Boost Big Blue's Income, Credibility

Schools are shunning the experimental classes of the 1970s and returning to a core curriculum of reading, writing and arithmetic. Millions of people are turning to fundamentalist religion and politics. And Ford Motor Corp., the U.S.'s second largest automaker, is turning to IBM to provide a single-vendor office automation and communications solution.

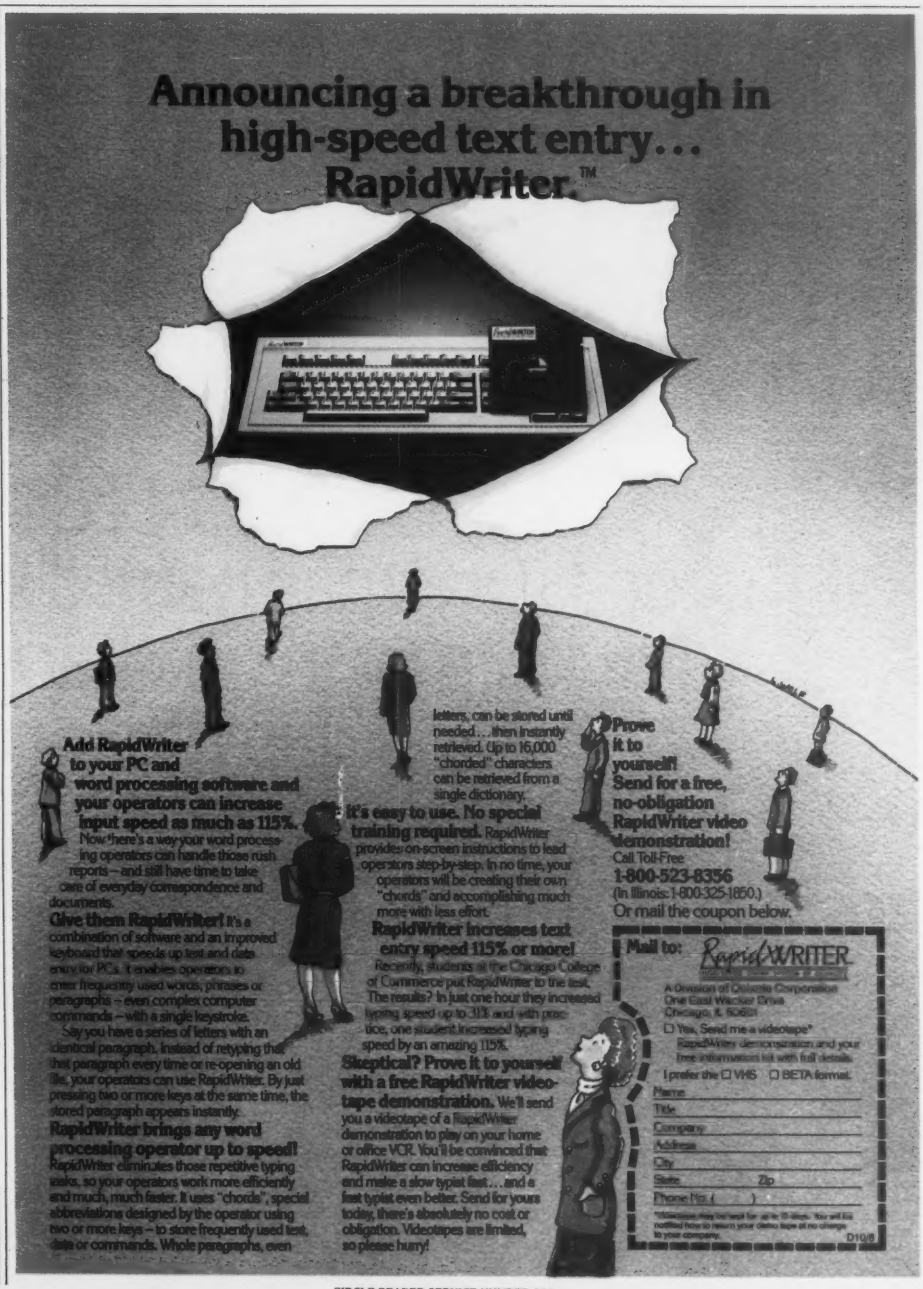
Ford's conservative, back-to-basics decision is in part a reaction to ad hoc purchasing that left the company with plenty of technology and no comprehensive plan to implement it. Other vendors find themselves in similar positions today. However, the Ford-IBM deal, worth a reported $300 million to $500 million, should have little impact on the purchase decisions of buyers or the business of vendors, said Wendy White, director of distributed systems at the Yankee Group, a Boston-based consulting firm.

"Just because Ford is choosing IBM for a single-vendor solution, others are not going to jump on the bandwagon," White noted.

The impact of the deal is that it boosts both IBM's income and credibility. IBM has long been criticized for deficiencies in its departmental office automation strategy, particularly in the area of integration. Ford's choice of IBM to integrate its products and those of other vendors into a cohesive OA system says that IBM can support the OA requirements of a large company, according to White. As a result, other OA vendors have lost the basic premise to their marketing strategy — that they can provide to large end users what IBM cannot.

The immediate impact of this, White said, is that customers who are evaluating OA systems may think IBM. If they explore further, though, users will discover that the Ford deal is a major program that will require a significant number of years to complete.

Not all companies can afford to wait. According to White, astute vendors will point this out and note that IBM's solution is not yet proven.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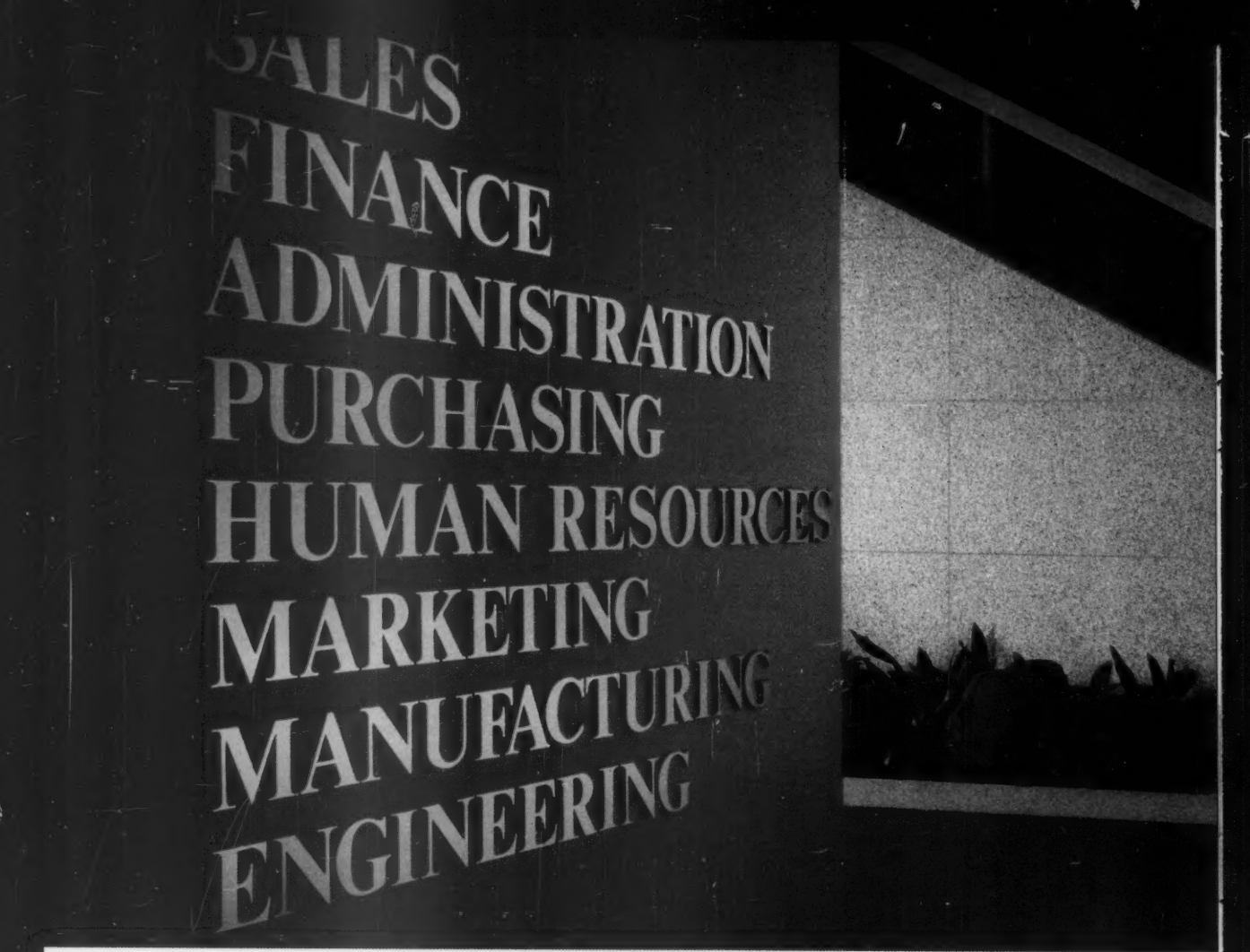

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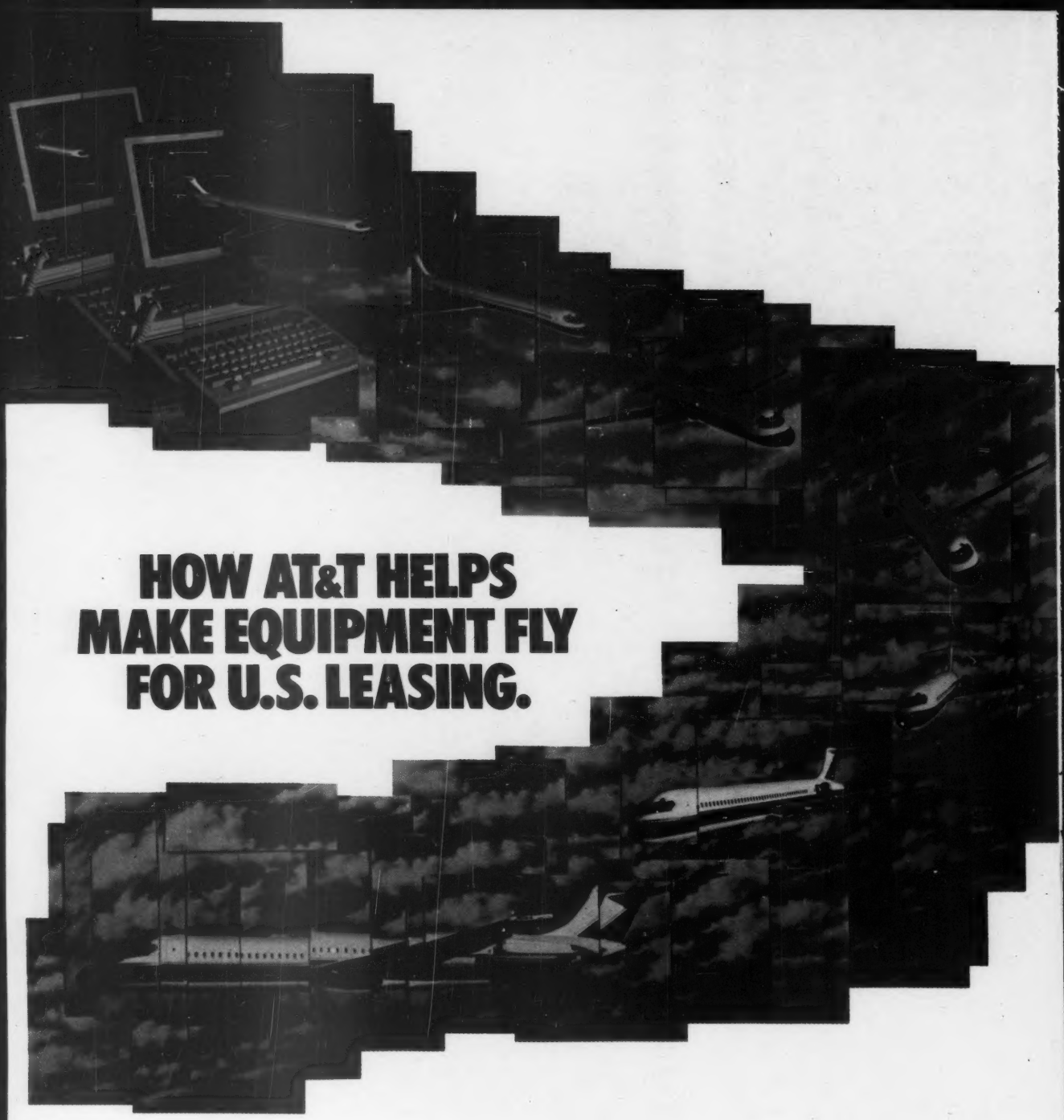

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USER SURVEY

What's Worked,

What Hasn't

·BY·THOMAS·H.·DAVENPORT·

Building a successful information system strategy begins with defining the needs of your particular organization.

The information systems function in most organizations is currently undergoing a great deal of change. Most of the early changes in information systems dealt with evolving technology; current changes in information systems involve not only technology but also changes in the management of the function itself.

These changes are driven by two factors. First, information systems managers no longer have a monopoly on information systems. Users and user/managers are playing important new roles in the acquisition, development, use and ongoing management of computing and communications. The second factor is the increasing importance of information systems in business success. They have moved from the back office to the front office, from support systems to strategic systems. The combination of these factors has meant that many of the approaches management has used to control information systems in an organization are outdated and inappropriate.

The Partnership for Research in Information Systems Management (PRISM) was founded in 1984 to research these issues and changes. PRISM works with large corporations and governmental organizations to find solutions to several problems facing the information systems arena. The research began with 30 sponsors for a 1984 study on "Managing Personal Computing"; since then four topics, chosen in consultation with sponsors, have been researched each year. Sponsors have included AT&T, E. I. Du Pont de Nemours & Co., IBM, the Internal Revenue Service, Morgan Guaranty Trust Co., Westinghouse Electric Corp., Rockwell International Corp. and Xerox Corp. PRISM now has approximately 60 sponsors that participate in its research.

Some of the changes in information systems management are the direct result of new technologies. These technologies are the drivers of change in that they involve new roles for users. Frequently, however, technology-focused solutions are insufficient to deal with the changes.

For example, PRISM research has found that most organizations are dealing with the proliferation of personal computers by establishing technology-oriented standards and recommended hardware and software configurations. While ensuring compatibility and reducing the number of separate vendors is important, research indicates that an applications-oriented management approach is even more necessary.

The approach laid out in the PRISM research involved classifying existing and proposed applications on a matrix of benefits and beneficiaries. Most PC applications bring greater efficiency and effectiveness to individuals. Other benefits, specifically the transformation of a job or work activity, and other beneficiaries, such as an entire organizational unit or the organization's external environment (cutomers and suppliers), may offer greater business value.

The research also concluded that a benefit/beneficiary matrix could be used as a tool for developing policies and guidelines. Backup and data security, for example, may not be important for individual efficiency, but they are quite necessary when an application transforms the relationship between an organization and its customers.

Many in information systems management saw users building business-critical systems on hardware and software acquired, owned and managed by the users themselves; 80% of those PRISM surveyed reported that user demand for such systems is strong.

Information systems staff was worried about the risks inherent in these situations; users typically resented what they considered to be interference from info systems management. PRISM research on dispersed systems included interviewing both information system and user management and found that the two groups were employing different sets of values or ethics.

PRISM labeled these two ethics the DP Ethic and the Dispersed Systems Ethic. In the DP Ethic, developed over many years and deeply instilled in information systems managers, info systems need to be reliable, efficient, accurate, uniform and integrated. The DP Ethic includes the following items:

- Data elements listed in the corporate data dictionary.
- Consistency maintained with other, related data bases.
- Extracts prepared for use by other departments.
- Adherence to corporate data standards.
- Corporate ownership.
- Full data base administration.
- Careful distribution and access controls.

These criteria, however, are the opposite of those for the Dispersed Systems Ethic. This value system embodies the ideas that are most natural to users and regards effectiveness, availability, flexibility, ease of use and the integration of systems with business activities to be important. The Dispersed Systems Ethic values the following items:

- Reports to list origin of data.
- Rekeying acceptable (as a last resort).
- Input editing on most critical elements only.
- User ownership.

These two ethics must be combined in appropriate measure for systems that will be managed by users. Any particular dispersed systems opportunity should be assessed by users as to its position on a spectrum ranging from the DP Ethic to the Distributed System Ethic. Appropriate management policies can then be constructed to fit the particular case. A mixed ethic sampling could include the following items:

- List of available data elements with meanings produced.
- Joint ownership.
- Informal data base administration.
- Validation controls for critical items.

A topic PRISM is currently researching involves planning for systems in which users play a major role, including dispersed systems and user-sponsored central systems. Most of the well-known methodologies for information systems planning are normally driven by the information system function. A key aspect of this research project will be to discover a planning process that is user driven and is appropriate in size and scale for user business units and departments. A frequently discussed planning maxim — that systems planning should be integrated with overall business planning — will be analyzed from a user-oriented perspective.

Another technology-driven issue, the expert system, is similar to the PC issue in that it represents a challenge and an opportunity for information systems managers. Expert systems are typically user driven yet complex and expensive and are extremely visible to senior management. However, expert systems are different from PCs and other recent technologies in the types of problems for which they are suitable, the skills necessary to build them and the potential impact on the organization that employs them.

A key conclusion of PRISM research is that there are still important roles for information systems management to play within expert systems technology. No other group in the organization is likely to formulate an overall strategy for expert systems.

> *Information system personnel should also attempt to educate senior management about the benefits of systems beyond mere cost reduction.*

The process to follow in getting up to speed in expert systems development depends primarily on the extent to which user management champions for expert systems. If these champions are present, they usually follow an application-oriented path and find (external) expertise, build proof of concept then build an operational system. If these champions are not present, expert systems work usually begins with a technology push starting with research then going on to technology scoping, hands-on (internal) experimentation, user management education, an applications study, a proof of concept, an operation system and broad development portfolio.

Information systems management should also ensure that the disciplines it has developed over the years in working with conventional systems be incorporated into an expert systems development methodology. Such a methodology should employ prototyping but also incorporate project milestones and checkpoints. Most expert systems incorporate several traditional system components that compose more of the overall system code than the knowledge base or inference engine. The presence of these traditional components indicates that a mixture of conventional and new development methodologies should be used.

The changes in the info systems environment have also created a need for new approaches to financial justification and measurement.

Most information system organizations have had chargeback systems in place for many years, and the same basic chargeback approach has been used throughout that time. The typical method is to charge by mainframe resources used (employing a complex algorithm) and to bundle other information systems costs into that mainframe rate. This approach is becoming increasingly dysfunctional as users acquire their own technologies and leave a smaller user base on which to spread the information systems overhead costs.

In the PRISM research project, 10 different approaches to pricing information system services were identified, ranging from memo record systems to the pricing of services based on their value to users. An overall recommendation was to move toward profit-center pricing approaches. Other recommendations included unbundling unrelated costs from the mainframe rate and simplifying the chargeback algorithm so that users could understand it. Perhaps the most important function of this research project was to point out the implications of each chargeback approach for the behavior of both users and the information systems function itself. Too often chargeback approaches have been developed that make life easier for information systems management; the correct objective, of course, is to make life easier for users.

Assessing info systems benefits

A second area of the information systems financial environment is information systems benefit assessment and system justification. Most firms have traditionally calculated a return on investment (ROI) for proposed systems as the primary criterion in deciding whether to build the systems. This calculation is rarely accurate even for traditional back-office systems; for an increasing number of strategic or competitive systems, however, it is virtually impossible to compute an ROI accurately.

PRISM has proposed that sponsors' approaches to assessing system benefits be contingent on the novelty and cost of the system. The high-cost, high-novelty systems are, of course, the most difficult to assess and justify. Decisions about such systems are inextricably linked to the value of the business changes they allow.

The relevant business unit manager, rather than information system manager, should evaluate such a system, and the decision is likely to be based on intuition more than methodology. Low-cost, low-novelty systems (PCs fit into this category for most organizations) should be evaluated rigorously only in the aggregate, while high-cost, low-novelty systems are the right type for ROI or similar approaches.

However, as an organization assesses its systems, it should attempt to manage system benefits — at least as much as it manages costs. Research found that few organizations really manage benefits. It is rare, for example, for anyone to go back and examine the real benefits from a system in use. Information systems management should also aggregate the benefits of all systems developed throughout the organization so that aggregate benefits can be compared to aggregate costs. Info systems personnel should also attempt to educate senior management about the benefits of systems beyond mere cost reduction.

The proper organizational structure for information systems should depend largely on its mission. It is difficult to achieve integration at the extremes of organizational structure, that is, totally centralized or totally user controlled. One needs to determine exactly what degrees of centralization and decentralization are desirable for what circumstances and what interfaces between information systems management and users lead to the highest degree of integration. The integration objective can serve as an underlying compass for information systems strategies well into the 1990s. F

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SYSTEM/36 WATCH

RICH TENNANT

·BY·MICHAEL·D.·MILLIKIN·

IBM Takes Aim At The Office Systems Market

Despite its influence over the mainframe and micro worlds, IBM has had a tough battle in the area of departmental systems.

For years, Big Blue's product development strategy reflected a Darwinian faith in the selectivity of the marketplace. Encouraging different divisions to produce competing products, especially for the office, IBM figured that the law of nature would select a winner. This approach produced a jumble of incompatible products that have confounded information systems managers trying to patch together a coherent corporate system out of the likes of the Personal Computer, 5520, System/36, 38, 8100, 370 and so on.

Finally recognizing that the compatibility issue is serious and that ignoring the issue won't make it go away, IBM has decided to do its own brand of natural selection and has proclaimed the System/36 to be its strategic office engine.

This proclamation underscores the direction that IBM said it plans to take. This direction includes plans to merge the 36 and the 38 into a future System/3X, retaining software compatibility but providing a great deal more power. Second, IBM said, it wants to work toward cross-system consistency of IBM architectures.

The roots of the 36 and 38 reach back to 1969 and the Series 3. But while the 38 was designed as a state-of-the-art data base machine, the 36 was designed as an easy-to-use system.

Unfortunately for the 16-bit 36, it debuted in 1983 — just about the time other vendors were rolling out their 32-bit departmental processors.

IBM bashing has always seemed a popular industry sport. Given the 36's initial sluggishness (early configurations had a tough time supporting a dozen users of Displaywrite/36), the machine became a favorite target. The System/36, people snickered, was painfully slow. (Amazing that IBM has shipped more than 100,000 of them.)

In response to these comments, IBM, at its Rochester, N.Y., facility, churned out a series of upgrades and new models during the first half of 1986 that boosted 36 system performance for office applications by some 400% from its performance level in December 1985 (using SSP Release 3.0 and prior to the memory upgrades of January 1986).

The 36 is a multiprocessor machine using up to eight independent processors to control application processing, I/O, workstations, filing, printing and communications. In its latest announcements, IBM introduced faster processors — a Main Storage Processor that is 50% faster and a Control Storage Processor that runs 70% faster. In conjunction with the Release 5.0 of SSP, these processors give the 36 added zip.

IBM made use of its newer technologies, especially the 1M-byte memory chip. The new, high-end 36 uses the 1M-byte chip and faster processors. By providing more memory and some faster processors and optimizing the operating system further, IBM claims to have greatly improved response time (or the number of users supported — take your pick).

With the full 7M bytes of memory, the System/36 high-end 5360 Model D supports 72 local terminals and 64 remote units. The mid-range 5362 with 2M bytes of memory supports 28 local and 64 remote machines, and the 1M-byte 5364 (the System/36 PC) now supports 16 local terminals. IBM does warn, however, that response times in such a maximum configuration could be unbearably slow.

On a token-ring configuration and running office software, the Model D supports 80 to 100 PCs in a two-ring local-area network (LAN) as a file server. As a file and applications server, the Model D supports 35 to 50 PCs.

Overall, IBM's goal is to drive response times down to less than two seconds. Remember, though, these figures are supplied by IBM; no comparative benchmarking has been done. However, Stephen B. Schwartz, the head of IBM's Systems Products Division, said Big Blue is willing to take on anyone. (Nothing has happened to this end, but competitors reportedly would love a confrontation.)

Big Blue has been busy doing more than throwing iron at its performance problems. Making a virtue out of what some would call a weakness, IBM is defending its multiarchitecture product line and swears that it is hard at work in two strategic areas: interoperability and cross-system consistency. Both terms should soon become buzzwords.

SYSTEM/36 WATCH

IBM justifies its stance by pointing out that one architecture cannot satisfy all possible customer needs. What is important, IBM insists, is the ability to connect the various types of machines into one logical, transparent network with a consistent interface across processors and applications.

Rumblings of connectivity

IBM has made noises before about getting its various families to work together. This time, however, Big Blue may be serious. In June, the company formed an umbrella group called IBM Information Services (IIS) to plan and manage the migration to a standard IBM interface for cross-system consistency. The group's goal is to make using IBM computers as consistent and as easy as using a phone.

In essence, IIS's mission is to provide a software cure for hardware incompatibility. As long as an application appears the same to the end user or as long as an application on one processor can transparently access data resident on a different processor, IBM reasons, it doesn't really matter *what* the hardware architecture is.

IBM is already working on a standard user interface. But the IIS crew must cut deeper than that to provide the foundations for transparent integration of different applications across a distributed architecture. IBM executives modestly estimate that this project will involve a minimum three-year effort to rewrite about one million lines of application code.

To make its drive for cross-system consistency easier, IBM has settled on three strategic architectures: the PC on the bottom, the 36 and 38 in the middle and the 370 on top.

Much has been said about the possibility of a CMOS 4300 (to replace 4381 models) or a micro 4300 (VM on a chip to replace the 4361 series) that could give departmental users IBM's Professional Office System (Profs) as an office solution. IBM's response? Sure, why not. For some users, especially those wedded to the large support structure mandated by the 370 architecture, a departmental-size 4300 would make a great deal of sense.

IBM will try to satisfy those desires, and the long-expected baby 4300 should be out this fall. IBM wants to be flexible enough to support either two- or three-tier architectures. In the three-tier architecture, the 36, or the future System/3X, is IBM's departmental engine of choice.

IBM says the 36, because of its ease of use, is perfect for an entry-level machine. And, IBM insists, because of its growth potential, the 36 can expand to support any size department. The 36 will also increasingly find use as a token-ring server. During the next few years, older 36s may find themselves increasingly thrust into this role as IBM develops its planned System/3X processor.

Despite grumblings from IBM's brass about IBM avoiding commodity markets, Big Blue is committed to the PC at its bottom rung. Likely differentiation from the swarms of cheaper, speedier clones will come in communications and interconnection into the corporate architecture. Big Blue says it isn't interested in churning out a multiuser PC. Primary configurations for the PC will be standalone, PCs in LANs and PCs in LANs with System/36 servers.

These broad guidelines leave IBM with a lot of room to maneuver, of course. And as always, there is room for specialization and vertical marketing (running a Microsoft Corp. Xenix variant such as PC Xenix, for example, to create a multiuser PC AT).

The System/3X

Although IBM's June 16 product barrage scattered new products up and down its entire architecture, the 36 and 38 lines were most affected.

Several years ago, the 36 and the 38 seemed to be in contention for the title of departmental machine, with various development groups competing against one another. IBM has decided, however, that the two systems should merge into what IBM now labels the System/3X.

Neat trick, you may say. The 36 is a 16-bit machine, designed for ease of use and security. The 38 sports a 64-bit processor for heavy-duty processing, with only 48 of those bits currently implemented. The 36 records top out at 4,096 bytes. With its

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SYSTEM/36 WATCH

larger capacity, the 38 supports 32,766-byte records. (IBM designed the processor as a data base machine.) Nevertheless, IBM intends to produce a machine with the ease of use of the 36 and the processing power of the 38.

IBM is not slowing down work on the 38 just because of the promise of a new machine. Big Blue has replaced the 38 family with six new models that upped internal processor performance by approximately 30% (measured in ARIPs — application-relative internal performance — not millions of instructions per second), while pushing the price per ARIP down by about 33%.

The former 38 high-end Model 40 running Personal Services/38 supported 62 workstations with a response time of approximately 5 seconds. With the new, high-end Model 700 endowed with 32M bytes of memory, response time for 62 workstations drops to about 1.5 seconds. (The 700 performance curve stays pretty flat with more users as well. The Model 600 supports 160 workstations with reponse times greater than 5 seconds. The Model 700 supports those same 160 workstations with times of less than 2 seconds.)

Despite its greater power and advanced design and despite its being out on the market nearly twice as long as the 36, the 38 just hasn't sold as well as its cousin. Approximately 25,000 38s have shipped, many of them overseas.

Recent software enhancements, especially the new IBM Systems Network Architecture (SNA) Low Entry Network (LEN) (also known as Advanced Peer-to-Peer Networking [APPN]), may give the 38 additional clout as a host machine, however.

Integrating with other tiers

Office applications aside, the 36 has to integrate with IBM's other strategic architectures. Not only does this mandate a clean connection to the 370 and down to the PC but also a horizontal link with the 38.

Because of the need for integration, probably the most significant IBM product from a long-range view is APPN. APPN uses LU6.2 transport over a variety of media — IBM Synchronous Data Link Control lines, X.25, token ring — and runs between the 36, 38 and 370.

IBM also supplies an application to go with its new network, Distributed Data Management (DDM). DDM is a distributed file system (rather than a distributed data base) that allows an application in a 36 or 38 to access data files transparently on a 36, 38 or 370.

And, for the first time, the 36 and 38 can communicate with each other without a mainframe host. This is the long-awaited alternative to the traditional SNA master-slave relationship.

APPN depends upon the facilities of SNA LEN — an extension to standard SNA. The designers worked with the following goals:

- Ease of use.
- Peer-decentralized network control.
- Media and topology independence.
- Interconnection with subarea SNA nets.
- Simplicity.
- Continuous operation.
- Ease of implementation.

Each network node provides five services: connectivity services, directory services, route-selection services, session-activation services and data transport services.

What these items boil down to is a dynamic network that calculates shortest paths, performs virtual circuit routing and adoptive-window pacing and automatically alters its configuration data base to reflect changes.

APPN uses what IBM calls the Rumor Algorithm to calculate paths and update directory information. Each node passes on a query to its nearest neighbors and no farther. Each neighbor then in turn passes the query along to its neighbors — just the way a rumor sweeps through an office. Although there is no centralized directory, nodes keep caches. Once an off-node address has been found, the requesting node tucks away the address in the cache. Before hitting the wires to find an address, a node first checks its cache to see if that address has been found before.

All this is transparent. There is no centralized directory. APPN requires no manual directory definitions; the data base update is automatic and event driven. There are no hierarchical directories, and there is no need to embed a structure in a name. Nor is there a need to recompute a path at each node. In APPN it is possible to define resources with the same name. Should this occur, APPN locates all instances of the resource but returns the one closest to the node originating the query.

Thus, APPN is a first step in providing cross-system consistency. Unfortunately for IBM, the company's incompatible architectures make it go through a lot of movement to achieve what a vendor like Digital Eqipment Corp. can accomplish with much less strain.

IBM can take some solace in knowing that it has made life more difficult for those vendors whose minis seem more viable as departmental processors. As competing vendors have grudgingly realized, the marketplace is demanding a solution for integrating IBM-style PCs into departmental office systems.

IBM, although characteristically off to a slow start, now has a fairly sophisticated tool: the System/36-based PC Organizer.

PC Organizer, an application announced in June, eliminates hot-keying back and forth between System/36 SSP and PC-DOS for attached micros. A single menu appears on the PC, offering transparent selection of 36 or PC applications. Users needn't know whether an application is based on the 36 or the PC or whether it runs under SSP or DOS. Just picking the appropriate number loads the proper program. PC Organizer also provides shared folders for PCs on the 36, eliminating the old virtual disk. Files within folders can be shared, and Displaywrite/36 is no longer a prerequisite.

> *The office picture is clearer. If you buy IBM, you'll be picking up a System/36 and living with a heterogeneous architecture.*

June 16 brought enhancements to System/36 office applications and new applications for the 38 and the PC.

For the 36, major enhancements included the following:

- A Displaywrite/36 interface consistent with that of the new PC-based Displaywrite 4.
- Personal Services/36 (PS/36) now offers document library services, supporting both the Distributed Office Support System (Disoss) and the 38. PS/36 now also offers a Profs bridge for the exchange of notes and documents. The communications link is transparent to the user.

On the PC, IBM offered the following:

- Displaywrite 4, a major improvement on the interface of earlier Displaywrite products. Displaywrite 4 supports voice annotation (although IBM is no longer making its voice board, the engine that this product planned to use) and revisable form text Document Content Architecture document interchange.

The System/38 has the following:

- Host document library services. These services are similar in functionality to Disoss document library services, and the host document library services on the 38 could replace CICS-based Disoss on 370s for some installations. Taken with SNA LEN, IBM has the beginnings of a streamlined, more casual networking and document services solution for smaller sites.

IBM sees four roles for the 36/38: as a small business system in an application-driven environment with little or no DP skill; as a large business system in a company with a DP organization with a need for on-line transaction processing and data base management and a large number of users; as a work group subsystem of a very large business system (the work group system would be application driven and end-user managed); finally, as an end-user system as part of a large enterprise. Here, IBM foresees multiples of such an enterprise system that would be centrally managed and use replicated applications.

Together, these products begin to provide the sort of cross-system consistency that IBM is hoping to make its trademark during the next few years. But leaving aside the question of delivery time for the moment, IBM still has quite a few significant holes, as follows:

- First, Query 36 does not work with DDM.
- Second, there is no PC Organizer for the 38. While working to provide a transparent interface on PC-to-36 connections and to eliminate the hot-key mindset, IBM still forces PC users to hot key back and forth when attached to a 38.
- Third, the 38 text editor is not a Displaywrite product; it has different applications and different interfaces.

You can't just go straight to a 38 if you want high-performance text editing — not unless you make every word processing station a PC running Displaywrite 4. And even in this scenario, the integration between the PC and the 38 is just not as smooth as the integration between the PC and the 36.

The biggest problem with these announcements is delivery time. For almost a year now, IBM has made some thrilling product announcements but then slapped on delivery dates ranging from late this year through the middle of 1987. Performance figures for some of the critical components are missing as well.

On the positive side

On the positive side, Big Blue has gone a long way in bolstering its middle-tier offerings as well as providing networking innovations. All this movement is critical preparatory work if IBM is to realize its goal of cross-system connectivity and interoperability.

The office picture seems much clearer now. If you buy IBM, you'll be picking up a 36 and living with a heterogeneous architecture. You'll have to rely upon IBM to keep developing tools that make this variety more palatable — or at least usable.

There is still plenty of room for DEC to swipe a good bit of IBM's lunch in departmental computing, especially because DEC has it now and IBM is still announcing future delivery dates. DEC is waging a very successful campaign by pitting its single architecture against IBM's multitude. But don't count IBM out yet — especially if it follows through on what it has started.

Millikin is an associate editor and consultant with Boston-based Patricia Seybold's Office Computing Group.

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VENDOR STRATEGIES

WHAT TO EXPECT IN INTEGRATION STRATEGIES

·BY·REBECCA·HURST·

The integrated office automation systems delivered at companies' doorsteps five years ago no longer address all the needs of users. Offices today often require more than a minicomputer running OA software because users are demanding job-specific applications and more power at their desks. To meet these demands, minicomputer vendors are integrating vertical applications and personal computers into their mini-based departmental systems.

What the comparative shopper discovers, though, is that vendors' offerings are very similar, according to Marty Gruhn, vice-president of the Sierra Group, a Tempe, Ariz.-based consulting firm. This occurrence is true even among companies such as Digital Equipment Corp., Wang Laboratories, Inc. and Data General Corp., three top OA vendors.

By the early '80s, users and minicomputer vendors such as DEC, Wang and DG no longer identified office automation as a tool for clerical workers and began to see it as a foundation for a broad corporate strategy. The result was the availability of such products as DEC All-In-1, Wang Office and DG Comprehensive Electronic Office (CEO). These office systems are based on a core of standard functions including word processing, electronic mail, calendaring, electronic filing and decision support. These functions are no longer enough. Today, OA vendors face market demands to integrate more capabilities into their systems.

OA packages have provided skeletal tools with which corporate users can manipulate data, putting it into charts and sending it to coworkers. But the market has matured, and there is a minimum demand for generic office systems, Gruhn says. For that reason, she explains, vendors are now integrating applications with their office systems that address specific areas such as the financial, legal, engineering and scientific markets. Among Wang, DEC and DG integration is taking three forms: interface kits, specific applications designed or acquired to work with an OA system and deals with third-party vendors.

GEOFF O'CONNELL

An integration effort by the three vendors is the availability of interface kits that provide hooks for software developers. The hooks are guides that explain how to integrate applications using the vendor's standard for the design of the file and interface. By using these hooks, applications written internally by a vendor or externally by a third-party developer or user can take advantage of the office automation system's components such as E-mail, word processing or a data base.

DEC offers a kit called the All-In-1 Integration Kit; Wang's is the Wang Office Application Program Interface; and DG's is the CEO Integration Toolkit.

Another approach vendors are taking to meet users' integration demands is in-house development of vertical applications that work with their OA products. For example, DEC has introduced four software packages, based on its All-In-1 integration standard, that address departments within a firm.

- All-In-1 System for Sales and Marketing has a base system that provides account tracking information, a field reporting module that includes expense tracking and a lead management module that has forms for listing and routing sales leads.
- All-In-1 Business Operations and Strategy System is a financial and operations planning system that includes menus to system functions, a spreadsheet with communications capabilities, data base, report generator and template library that formalizes information formats.
- All-In-1 System for Employment Management was designed to help organizations administer their employment process with facilities for applicant tracking, job requisition processing, job matching, status reporting and employee self-nomination.
- All-In-1 System for Telecom Management is a system for helping telecommunications managers allocate private branch exchange use and capital equipment costs, track equipment and line use, generate invoices, maintain a data base of all cabling and wire paths, provide a cost-effective growth path for future data/voice applications and support the strategic communications needs of an organization.

VENDOR STRATEGIES

Vendors are also making marketing and development agreements with third-party software suppliers to integrate vertical applications with their OA systems. For instance, DEC and Ross Systems, Inc. began a cooperative merchandising agreement in early 1984. Under the deal, Ross is using the DEC All-in-1 Integration Kit to integrate its accounting and financial applications more closely with the All-In-1 office system, while DEC is marketing Ross's products.

Within the last two years, though, Wang has been the most aggressive in terms of both agreements and acquisitions. In the last year alone, the company has signed agreements with third-party vendors for more than two dozen software packages that work with Wang Office.

> *Wang has been the most aggressive in terms of both agreements and acquisitions.*

These packages include sales and marketing applications such as Autocomp Systems Corp.'s Tool for Innovative and Productive Selling, Mitchell Management Systems, Inc.'s Sales and Marketing Management as well as accounting software for the building industry including Data Basics, Inc.'s Architectural Engineering Master Accounting System and Construction Master Accounting System.

Through acquisitions, Wang has added financial and legal applications to accompany Wang Office. In January 1985, the company acquired Walsh Greenwood Information Systems, Inc. as a wholly owned subsidiary. Renamed Wang Financial Information Systems, Inc., the subsidiary offers Shark, a stock market retrieval and analysis system for IBM Personal Computers and compatibles such as the Wang Professional Computer.

Wang also acquired a minority stake in Custom Software Services, Inc. (CSS) in August. The agreement allows Wang to increase its share of common stock to 21% of outstanding shares by 1989.

CSS is a Wang-registered software vendor with installations in more than 50 large law firms across the U.S. CSS products run on Wang's VS minicomputers and include legal accounting and related administrative applications, legal information management software and desktop automation. As part of the Wang and CSS relationship, the two companies plan to integrate CSS' software with Wang applications such as Wang Office, WP Plus and the Professional Application Creation Environment.

In another move to target the legal profession, Wang signed a joint development agreement with West Publishing Co. to bring out specialized desktop solutions consisting of software, information and hardware products for the legal market. The companies indicated that this would include the use of compact disk/read-only memory mass-storage technology in the future.

The financial and legal professions are popular vertical markets for office automation vendors, but Gruhn sees the most potential in legal applications. "The financial market is big enough that everyone can have a piece of pie, but the financial demand has been met by IBM," she explains. "The legal market is a better area because it typically has been ignored."

Another major area of integration for minicomputer vendors is PCs and the applications that run on them. Additionally, these vendors are connecting PC products to other computer systems as well as their own.

The pressure to offer PCs at all comes from two sources. First, the explosion of PC sales has translated into a large base of users who want to access departmental and corporate data, analysts agree. This need can actually work to the minicomputer vendor's advantage because local-area networks cannot offer

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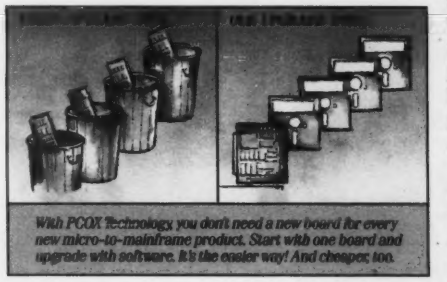

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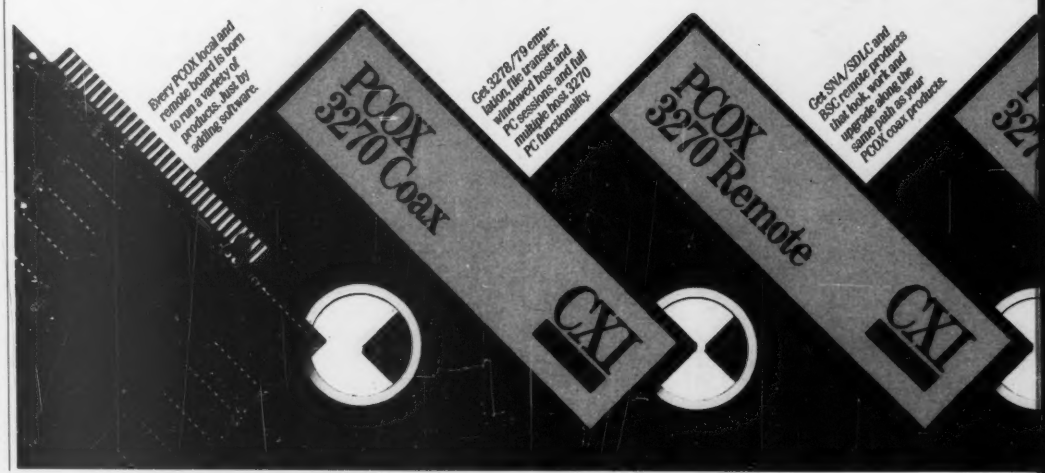
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software that matches the richness of minicomputer software, says Christine Hughes, vice-president of the Gartner Group, Inc.

Should accommodate PC

Echoing Hughes, the Sierra Group's Gruhn observes that "personal computers are the No. 1 acquisition. The good news is that the better minicomputer vendors accommodate the personal computer, the more likely minis will be selected as the departmental system of choice over networking."

The second factor, Hughes says, is that "minicomputers were never designed to support office-type utilities, so there is a degradation of response time with the addition of more users." Therefore, she says, vendors will have to off-load the system onto intelligent workstations and reconfigure the mini as a departmental server.

In September, DEC took this approach by announcing a configuration of the Microvax II that supports up to 30 PCs linked with either twisted-pair wire or Thinwire Ethernet. DEC may be the first, but, Hughes says, all vendors will offer reconfigured minicomputer file servers. "Even IBM is expected to announce a System/36 reconfigured as a file server that supports 40 users."

Despite this opportunity, minicomputer vendors traditionally have avoided IBM Personal Computers and compatibles, notes John Murphy, an associate at the Amy Wohl Group. Instead, these vendors introduced their own PCs and workstations based on proprietary operating systems. For example, "DEC developed its Rainbow as an alternative," Murphy says. "It was sold internally through DEC and externally through nowhere." Then, Murphy says, "Minicomputer vendors realized that IBM was not going to sue them for making PC compatibles, so everyone got into the compatible business."

DG announced the Dasher/One, Wang introduced the Wang Professional, and DEC unveiled the PC Professional — all based on Microsoft Corp. MS-DOS and all compatible with the IBM PC. The next step has been integrating IBM PCs and compatibles into these vendors' minicomputer-based office systems.

Mini vendors first offered terminal emulation as the means to link PCs to departmental computers. Emulation's inability to take full advantage of personal workstations has been well documented, though, and most vendors have begun offering network access to their minicomputers. For example, DEC offers Decnet DOS, which allows MS-DOS-based IBM PCs and compatibles to access other computers tied to the company's proprietary network, Decnet. Similarly, DG offers CEO Connection and Wang offers Wang Office Connection.

Minicomputers also serve as a means for connecting personal workstations to IBM mainframes through IBM gateways. For instance, an office might use Wang as an intermediary between IBM PCs and a host mainframe. The PC would connect to the Wangnet network via Wang Office Connection. Wangnet, in turn, would enable the PC to communicate with a Wang minicomputer on the network running any number of gateways including Wang Office/Dissos or Wang/Profs. Through one of these gateways the user could then communicate with the host mainframe. All mini vendors offer such solutions for several gateways including those for IBM Systems Network Architecture (SNA) and Binary Synchronous Communications.

However, this approach is not a general solution, Murphy says. "Everyone is gaga about micro-to-mainframe connections, but there are only satisfactory solutions on a situation basis." This individualized approach not only limits the micro-to-mainframe capabilities for users, it threatens the viability of vendors who do not realign their networking strategies.

'Office automation is dying'

"Office automation is dying in terms of a discrete marketplace," Gruhn explains. Instead, it is being reborn as the foundation of information systems.

To varying degrees, however, minicomputer vendors are responding by augmenting their proprietary networking and communications products with those based on industry standards. The proprietary networks of vendors are based on some

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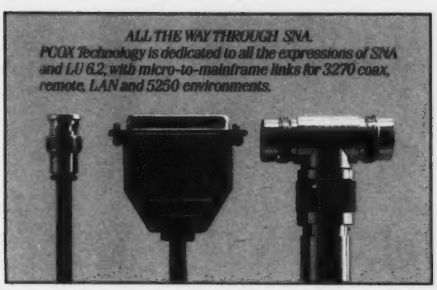
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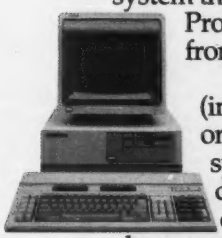

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standards themselves. Decnet and Wangnet are both Ethernet-based networks and DG's Xodiac network management software supports Ethernet (IEEE standard 802.3).

Hedging their bets, most vendors appear to be taking a two-part stance. They are supporting IBM's SNA standards, which are expected to become the U.S. de facto standards, and are providing products based on the International Standards Organization's Open Systems Interconnect (OSI) model, which is becoming the international standard.

> *Minicomputer vendors first offered terminal emulation as the means to link PCs to departmental computers.*

The vendors' primary support of SNA takes the form of the gateways mentioned earlier, but their products are generally expected to support such facilities as the peer-to-peer networking provided by IBM's LU6.2 and PU2.1.

DG appears to be the most open of the three vendors. Its Xodiac reportedly fully supports the OSI model. Its DG/SNA communications software is compatible with IBM's SNA, and DG offers XTS/SNA to allow Xodiac and XTS/SNA nodes to talk to each other.

DEC's Digital Network Architecture, around which Decnet is built, closely parallels OSI, and last year DEC announced its intention to incorporate elements of the OSI model into Decnet as the protocols become more defined.

The Wang Systems Network (WSN) is Wang's architecture on which Wangnet is based. Wang states that WSN follows OSI, although the WSN model has only four layers compared with OSI's seven.

Another way that mini vendors are bringing personal computers into the office system fold is by offering MS-DOS versions of their office automation applications. Both Wang and DEC have announced that they provide complete versions of Wang Office and All-In-1, respectively, for IBM Personal Computers and compatibles. DG currently offers only a PC version of the word processing software in CEO — WPS Plus. By the end of 1987, DG and all other vendors selling into this market are expected to announce full PC versions of their OA software, Gruhn predicts.

Such integration efforts by mini vendors have been good, but they are not enough. Users of mini-based office systems who spoke with *Computerworld Focus* unilaterally expressed satisfaction with their current systems. However, users and analysts agree that vendors have to provide additional functionality. They state that vendors need to provide such features as compound document capabilities, intelligent grammar checkers and tutors, file integration, voice, WYSIWYG publishing and better user interfaces.

Of these features, the user interface was mentioned most frequently.

Scientific notation a problem

For technical office system users, another problem is scientific notation. "None of the major vendors knows scientific notation very well," asserts Jerry Michael, assistant director for integrated professional systems at Grummon Data Corp. and a Wang user. "The only one that does it well is [NBI, Inc.] We're still waiting for the others to catch up."

Identifying features is just half the battle. The next challenge for vendors is integrating these capabilities. "They could do piecemeal additions, but most vendors could offer brand-new software and documentation that is compatible with their current release," Gruhn says. "This would be the cleanest and easiest solution in the long run." ■

Hurst is a Computerworld Focus *senior writer.*

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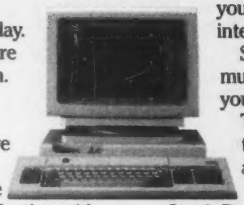

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TECHNOLOGY TRENDS

Office Publishing: In With The New

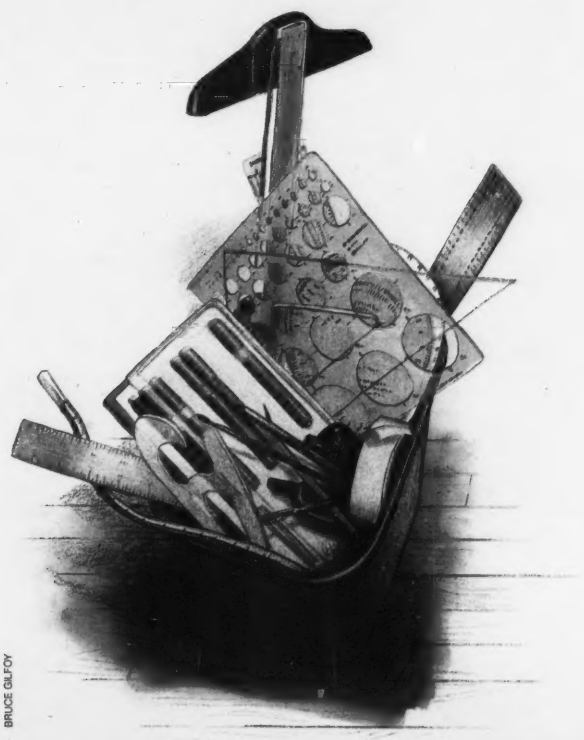
·BY·STAN·KOLODZIEJ·

While a great deal of attention has focused on desktop publishing lately, higher priced corporate electronic publishing systems (CEPS) have found their own fast track.

The CEPS market is hot. At a time when corporations are experiencing frustration at cost-justifying new computer systems, the savings from in-house publishing systems can be quickly quantified. This alone is making these systems the darlings of the divisional publishing manager who is under constant pressure to contain in-house publishing expenses.

The new breed of high-end CEPS also works well at what it does: streamline the on-site creation and merging of corporate text and graphics into polished, finished documents, eliminating the usual merry-go-round of shuttling cut-and-paste work between writers, artists, typesetters and print shops.

"Electronic publishing systems can win you over in a number of ways," explains Paul Lewis, director of Interconsult, Inc., a Cambridge, Mass., consulting firm. "If you're concerned about cutting in-house publishing costs, the systems can do it. If you want more control over your publishing, if you want your publishing to be easier, the systems can provide it."



BRUCE GILFOY

Lewis says the recent press attention on electronic publishing is making a lot of corporations take a closer look at their own in-house publishing procedures. Most companies, he explains, will be surprised at the extent of the documentation they produce in-house in the way of procedure manuals, product descriptions and announcements, newsletters, technical publications and even books. Following this surprise will be the shock of how much it all costs and how long these publications take to go from conception to finished product.

International Data Corp. (IDC), a Framingham, Mass., research firm, says only about 50% of current corporate in-house publishing is done on computers. This figure shows the huge potential market that is opening to CEPS. Bolstering this are claims that in-house publishing can cut in half the average $300-a-page cost that commercial printing houses now charge for producing technical documents.

IDC estimates that there are 60,000 companies in the U.S. that currently have an in-house publications department. IDC, in a recent report, said a typical CEPS prospect is a Fortune 2000 division with revenue of $50 million to $100 million, spending more than $1 million annually on published materials. The IDC report added that less than 5% of these companies currently use in-house electronic publishing systems.

"Until now, most in-house publishing expenses have been untouchable because the quality of documentation produced visibly reflects the image of the company," Lewis explains. "It was mechanical, specialized, and computers didn't have the flexibility to bridge these functions. Companies bit the bullet."

Computer technology has caught up in the meantime. Hardware has increased in capability and decreased in price. Motorola, Inc.'s 32-bit 68010 and 68020 processors, running Unix-based publishing software, are the engines of choice for most vendors of high-end CEPS. These CPUs have the muscle to handle the massive data bit rates required for good publishing graphics. They also have the speed to act as file servers for a number of on-line workstations. Most of these CEPS have built upon advances in computer-aided design and manufacturing software to produce powerful programs for doing graphics and text.

High-end CEPS are still expensive, generally beginning at $30,000 for a base system and running more than $200,000, depending on options. For the money, high-end customers get a dedicated, turnkey publishing system slated solely for high-volume, complex publishing activities.

These systems bump up against top-of-the line desktop systems that can cost from $15,000 to $70,000 and run primarily on IBM Personal Computer XTs, PC ATs and the IBM RT PCs. The cutoff

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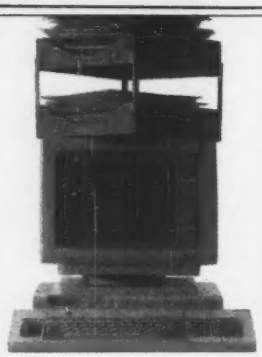


point with most desktop systems, however, is about 50 pages per project, while users of high-end systems have successfully handled book-quality projects of 800 pages and more.

While some of the desktop CEPS offer networking, this feature is a staple of high-end publishing. Systems from such leading high-end vendors as Interleaf, Inc. of Cambridge and Xyvision, Inc. of Wakefield, Mass., can handle simultaneous document input from several local and remote networked users. Users can also expect their systems to come bundled with high-resolution, bit-mapped WYSIWYG workstations that enable users to display on their screens exactly what will appear on the finished pages. Full vendor training and support may be included.

Users of high-end CEPS cite a litany of pluses, ranging from quick system payback to fast project turnaround. Manufacturers and high-tech companies that need to have new documentation tagged with new products have been among the biggest customers of high-end systems to date. Down the road, however, big hardcopy grinders such as financial institutions and the legal profession are expected to be major buyers.

DG's turnkey system

Data General Corp., Westboro, Mass., for example, is using a turnkey Interleaf publishing system to produce hardware documentation for its OEMs and corporate customers. The $180,000 system consists of three Sun Microsystems, Inc. workstations (two of the workstations share an 86M-byte disk), an image scanner and an Imagen Corp. laser printer.

Jack Yellig, DG's section manager of Customer Documentation, says that the system has helped the company's in-house publishing immensely. Before the Interleaf system was installed, document writers used DG ASCII-based terminals to create and format text, while graphics were laboriously put together in the illustration department. Everything was then mechanically pasted up, given to the in-house typesetter and then sent to an outside printer for the final work. In between were numerous revisions, even at the printing stage.

"The engineering people can change their minds and the project can be pulled at any stage for revisions," Yellig explains. "We were always taking stuff out of the printer at the last minute. The Interleaf system allows us to do all changes in graphics and text quickly on the screens. Writers can gather around, merge text and graphics and brainstorm at one workstation. What took a month to do can now be done in a week. Another plus is that typesetting codes such as boldface and italics are standardized and automatic in the system."

Installed a year and a half ago, the Interleaf system at DG has produced 600-page documents, something Yellig claims would be a nightmare using old methods. Yellig adds that the system has paid for itself within the first year. No one has been laid off. "There's just been a change of clients for the graphics art people. They are now doing things like foreign language books and newsletters. There's always more work."

Rockwell Switching, a Chicago division of Rockwell International Corp., has been using a $400,000 turnkey Interleaf system consisting of 16 Sun Microsystem Model 3 workstations attached to two Sun 515M-byte file servers, dual eight page/min printers and three laser printers. The system has been used since March 1986 to produce a variety of technical documents for its digital switching division.

Mike Eleder, supervisor of Technical Publications at Rockwell Switching, lists two direct benefits of the turnkey Interleaf system.

"The total length of publishing projects has been cut in half," Eleder explains, "mainly because we don't have to keep going back and forth between work queues. There is also a definite cost improvement. Writers spend about 15% less time proofing boards and making corrections. That's a direct cost benefit."

Eleder claims that further cost benefits will accrue with the creation of an electronic library of more generic drawings that can be used for future projects instead of "reinventing the wheel each time."

Projects are broken down into text and simple drawings handled by writers on their workstations, while artists use their own stations to produce finished illustrations. At a certain stage, Eleder says, everything is brought together on the screens and a master of each finished page is created, laser printed and sent to the printer.

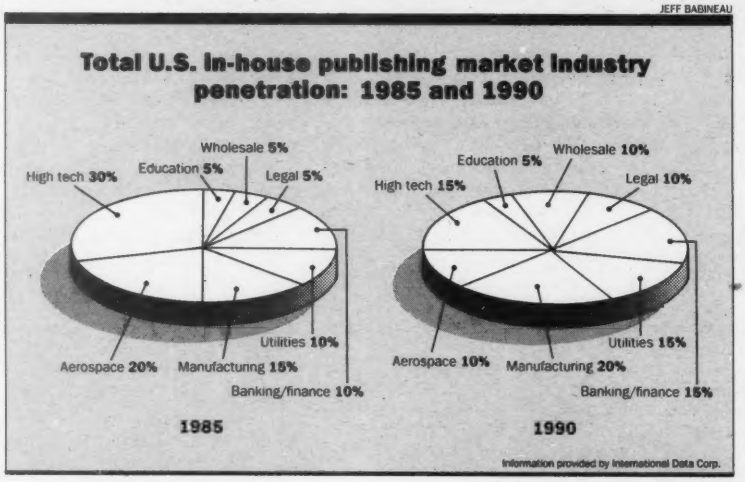
Previously, Eleder adds, documentation was produced by longhand or on Wang Laboratories, Inc. word processors, then galleys and boards were proofed and printed.

Not all is rosy for CEPS users, however. Yellig says there is resistance from some in-house publishing people who to date have preferred staying with older, mechanical ways, and, Eleder explains, the learning curve with his new system has been slower than first expected.

Some customers have also expressed concern about systems adequately handling graphics input from outside workstations. Most high-end CEPS vendors are addressing the problem by offering some sort of local-area networking capability, either over the Ethernet baseband standard or through proprietary networking facilities such as Xyvision's Virtualnet high-speed wide-area network and its Fastnet local-area network. To widen further the sources of input outside the publishing system itself and add value to customers' installed bases, most users of PCs and word processing systems can download ASCII-based text directly into the systems.

One publishing supervisor at Boeing Co. in Seattle recommends steering away from systems using proprietary architectures because their makeup might prohibit future connectivity with multivendor systems and preclude immediate benefits from any networking standards coming down the pike.

JEFF BABINEAU



Cummins Engine Co., a Columbus, Ind., manufacturer of engines, formed a task force of in-house publishing supervisors and users two years ago. The group studied and broke down the publishing work flow at Cummins, creating flowcharts to illustrate the 29 individual steps taken within their publishing projects to go from the research stage, through proofing and revision cycles and finally to the printer. As with most in-house publishing operations, Cummins' artwork was created separately from the text and only merged at the final stages of the production process.

According to Earl Hahn, director of Publishing Services at Cummins, the processes included eight review steps for both graphics and text. Changes done to text after it was typeset and to graphics after they were created caused delays and additional expenses. The chart was able to pinpoint publishing flow and bottlenecks.

Hahn says the production expenses alone cost $8 million annually, and labor was pegged at 100 man-hours per year, costing an additional $3 million. Publication delays were extensive and turnaround time was a key factor in bringing in a Xyvision system. Cummins suggests that potential buyers of CEPS follow the same task force procedure to get a more accurate reading of their publishing needs.

The Cummins example is one of a large company with extensive publishing operations doing its homework and finding its solution in a CEPS. Cummins' expensive publishing output is hardly unique, however. A lot of companies are in the same expense ballpark. Market research firm Dataquest, Inc. of San Jose, Calif., for example, estimates that typical

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Interconsult's Lewis, however, still cautions against buying a system beyond the needs of a corporation's requirements.

"Some companies are going to be hooked into buying high-end systems with a lot of capacity lying idle," he says.

There is also the possibility that users might be expecting too much in the way of quality publishing from the high-end systems. IDC reports that most company magazine, book and newspaper production will still be farmed out to the commercial publishing and printing houses.

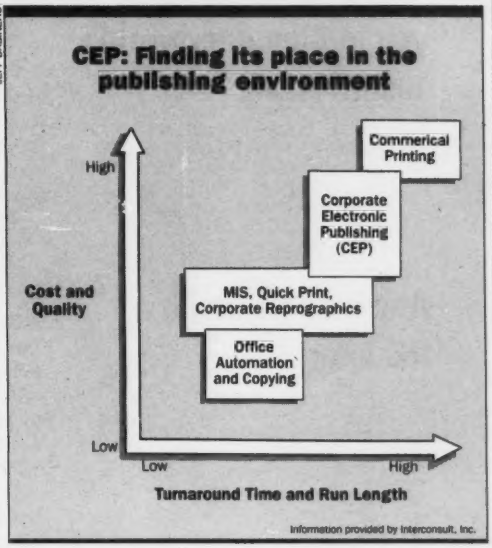
For the time being. As the high-end publishing market gets crowded with new vendors, capability will go up as prices come down.

Interleaf dropped a bombshell recently with a dramatic decrease on the price of its Technical Publishing System (TPS). TPS is usually bundled with Digital Equipment Corp., Apollo Computer, Inc. and Sun Microsystems workstations. Starting at $29,000, for example, a turnkey Interleaf system consists of the TPS software running on a DEC Vaxstation II with 3M bytes of resident memory, 71M bytes of hard-disk storage, a 95M-byte streaming tape cartridge and Interleaf's LPR-308 laser printer. That price is down from $50,000 just a few months ago.

Xyvision, whose systems are also Unix-based and run on Motorola, Inc. 68020 processors, is upgrading its in-house publishing system to handle a variety of in-plant and commercial publishing projects. The company also says it plans to be more aggressive in pricing.

"What we've done is bundled the [publishing] system to meet more of a common publishing denominator," explains Arlene Boyd, Xyvision's director of marketing. "Customers are becoming more particular about what they want. They shouldn't have to pay extra for something like magazine-quality formatting that has been built into the software but might not be used. The commercial and in-house markets are completely different and need different software."

More traditional high-end system vendors include Texet Corp., Arlington, Mass., whose Live Image Publishing System uses proprietary hardware and software; Xerox Corp., whose XPS 701 system runs on DEC's Microvax stations; and Eastman Kodak Co. of Rochester, N.Y., whose Kodak Ectaprint Electronic Publishing System bundles Interleaf publishing software on Sun Microsystems hardware.



New companies are also in hot pursuit. Rise Technology, Inc., Cambridge, has introduced its ETP-1 system that has a $75,000 base price and consists of a Motorola MC68010-based workstation, a WYSIWYG display, video camera, laser printer and proprietary publishing software. For an extra $15,000 the firm adds an image scanner and faster laser printer.

Rise is unique because it approaches in-house publishing from the image side first rather than from the usual publishing emphasis on text first, whereby the copy is written and then the pictures selected to illustrate it. Using a standard video camera or hard-copy scanner, the Rise system grabs pictures, stores them in continuous tone then quickly displays them on the screen with no intermediary processing steps.

Framemaker, Inc., a San Jose company that also offers a Sun workstation-based system, uses Sun's windowing capability to offer multipage viewing on the screen. Yellig at DG claims the Framemaker system excelled at integrating text and images.

NBI, Inc., a Boulder, Colo.-based office automation company, is also in the race, trying to shed its low-key profile of late and gain some attention with its Integrated Workstation, a Unix-based publishing system using a Motorola 68010 processor and offering extensive communications facilities. With a base price of $13,000, climbing to $26,000 with options, the NBI system is positioned directly between the low-end Xerox 6085 system and the higher priced Interleaf TPS.

Even the lowest estimates of CEPS market size are impressive. IDC sees the high-end CEPS market climbing from 600 units shipped, representing revenue of $50 million in 1985, to 5,750 units and $330 million in revenue in 1990. This amounts to a 43% compound annual revenue growth rate until the end of this decade.

Other researchers, perhaps gushing a bit optimistic, see the entire CEPS market surging to $4 billion by 1990.

As more firms come into the market, analysts say, the increased competition will continue driving systems up in power and down in price. In this race, the CEPS user could be the winner. F

Kolodziej is a Computerworld Focus *senior writer.*

Young Corporate Publishing Industry Shows Promise

The recent Corporate Electronic Publishing Systems IV show held in Boston reflected both the excitement and confusion surrounding the young, in-house electronic publishing industry.

The show was certainly an indication that corporate electronic publishing system (CEPS) products are now plentiful, from low-end desktop publishing units to high-end, dedicated systems costing millions of dollars. It also pointed out that CEPS has a way to go before users can sort through their publishing requirements and select the best system for their needs.

"One of the problems is the electronic market still hasn't figured out how to segment itself," explained Molly Upton, Office Automation Reporting Service editor at International Data Corp. (IDC), Framingham, Mass. "There are a lot of vendors whose equipment can't be neatly slotted in the desktop, mid-range or high-end categories. That's a bit confusing for users."

Users were also confused by how they could fit these systems into their own publishing needs, Upton said.

Upton gives the following as examples of user needs: more revision-level control, good data base management tie-ins, better user interfaces and more compatibility with MIS data bases and processing. The MIS connection is noteworthy, in light of the fact that a recent survey conducted by Interconsult, Inc., Cambridge, Mass., revealed that MIS is gaining the most control over the purchase and operation of CEPS systems, followed by corporate administration and marketing areas.

Another recent report from IDC indicated that the data processing department was involved in the purchase and running of in-house publishing systems at about 31% of user sites surveyed.

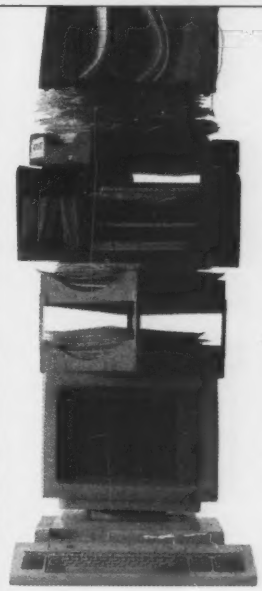
"There were a lot of attendees at the Boston show who were looking for more integration of existing office automation functions," Upton said. "Until that happens, sales of CEPS products might not meet projections."

Another area of interest in the CEPS arena will be compact disk/read-only memory (CD-ROM) technology, which will be used more and more to store huge amounts of reusable data and text in large publishing operations. To date, there have only been a few CEPS companies experimenting with CD-ROM.

New distribution channels is another area vendors will have to explore to expand the CEPS market and increase sales. A recent IDC report indicated, for example, that although most in-house publishing vendors currently depend almost entirely on direct sales forces, "market expansion requires multitier, indirect distribution channels."

Following that thought, IDC concluded that distributors and value-added resellers will be important distribution channels for sales of mid-range and high-end CEPS systems by 1990.

— Stan Kolodziej



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SPECIAL SECTION:
INFORMATION CENTERS

Reshaping The Info Center

DAVE RIDLEY

·BY·NAOMI·KARTEN·

When information centers first appeared, they were seen as the solution to everything ailing MIS. According to Fundamentals of Information Centers 101, if you could get users to generate reports and one-time-only documents that MIS didn't really want to deal with anyway, the application backlog would shrink to pint-size proportions. Relieve DP staff of the badgering from users who want just one more change and the adversarial relationship between users and MIS would reverse itself. Everyone, so the thinking went, would live happily ever after.

These were preposterous presumptions. Just look at what has transpired in only a few tumultuous years.

Take the backlog problems that have plagued the information profession. Let's face it — any tool that is useful, or at least perceived to be useful, will be in great demand. The tools of the information center trade, namely, personal computers and user-oriented languages, have created a hunger for number crunching and graphics that could not have been imagined several years ago. Just as none of the grand industry schemes of the last 20 years has cut back significantly on backlogs, information center-supported end-user computing stood little chance of doing any better.

Yet, there was, initially, an intense need to believe that information centers could fulfill this mission. During the first few years of data manipulation, researchers surveyed information center managers to see if they were successful in reducing the backlog. A majority of these managers said yes, pointing to user-developed applications that would previously have added to the MIS backlog.

Not many people questioned these results. This response is not surprising; a backlog is at best a fuzzy number that represents management's guess of the amount of work yet to be done. So, many information center managers drew a logical conclusion: If you take a project from Column B (work done by MIS) and move it into Column A (work done by users), Column B becomes shorter, that is, with less of a backlog.

Only recently has there been widespread recognition that whatever else information centers are accomplishing, they are not reducing the backlog. If anything, that backlog is increasing. Users are learning enough about computers to request even more complex systems from MIS than ever before.

Although fourth-generation technologies have sped the rate of application development, they have at the same time opened up opportunities for MIS development never before possible. The result is that new service requests are piling up in Column B faster than old ones are being transferred into Column A. What has changed — and for this change the information center deserves credit — is the *content* of the backlog, not its size. With fewer interruptions for got-to-have-it-now reports, MIS can concentrate on serious development tasks at hand.

Has anyone noticed that you don't hear much anymore about the relationship between users and DP? It's not that things haven't gotten better; in many cases, they've improved considerably.

But consider the human dynamics. Things have always been complicated between users and MIS. Then along comes the information center, which is wedged between the two factions. The result is three different relationships.

Users and the information center. Although many users feel they have received excellent training and support from the information center, many others are still waiting for attention and are as disgruntled with info center responsiveness as they ever were with MIS. Managing the demand for services has become one of the center's biggest challenges, fed by ever-growing user expectations and a sometimes overly well-intentioned info center service orientation.

SPECIAL SECTION: INFORMATION CENTERS

MIS and the information center. While many programmers are happy to be relieved of "nuisance requests" from users, they are less than ecstatic that users, with information center support, are becoming computer mavens. Though the intensity of feeling seems to be diminishing, the information center still represents the enemy to DP because although it may be a part of the MIS organizational chart, the information center aids and abets end-user computing.

Users and MIS. Although many in DP like to share a common ground with their users, there are still many DP staff members who are distressed that the common ground is their own. After intense resistance to programming with languages so simple that "even a user could do it," programmers are now using these tools less reluctantly.

In addition, the implications of end-user computing for DP career security and career direction remain a significant concern to info systems professionals. "The Demise of the Applications Programmer" continues to be a popular topic on the speaker circuit.

What have info centers done?

So, if information centers have not eased the lives of MIS, what have they accomplished and what do they mean for MIS now and in the future?

Information center energies have been focused largely on the introduction and support of end-user computing (user training, application consulting, product evaluation and development of standards and guidelines), supplemented by a daily dose of hand-holding and troubleshooting. Information centers have been successful in calming users' computer fears.

To a large extent, these successes have been achieved in spite of, rather than because of, MIS. Information centers have not been able to depend upon MIS for extensive support in their efforts. For a long time, info center professionals could look nowhere other than among themselves for expertise in selecting and using end-user computing technology. Even in places where DP staff viewed PCs as more than toys, most made no move from their mainframe responsibilities to bone up on micros.

As a result, many info centers have operated as a separate entity within MIS with little connection to the rest of the MIS organization.

Information centers are now in a state of transition. Management is beginning to ask questions about the benefits of information centers relative to their costs. These centers are learning that long-term survival may depend on the degree to which they help users apply computer technology to address business needs.

In effect, info centers are becoming less technology driven and more business driven. Succeeding in the next phase of information center evolution is going to require a much stronger working relationship between the information center and the rest of MIS. Consider some of the following trends:

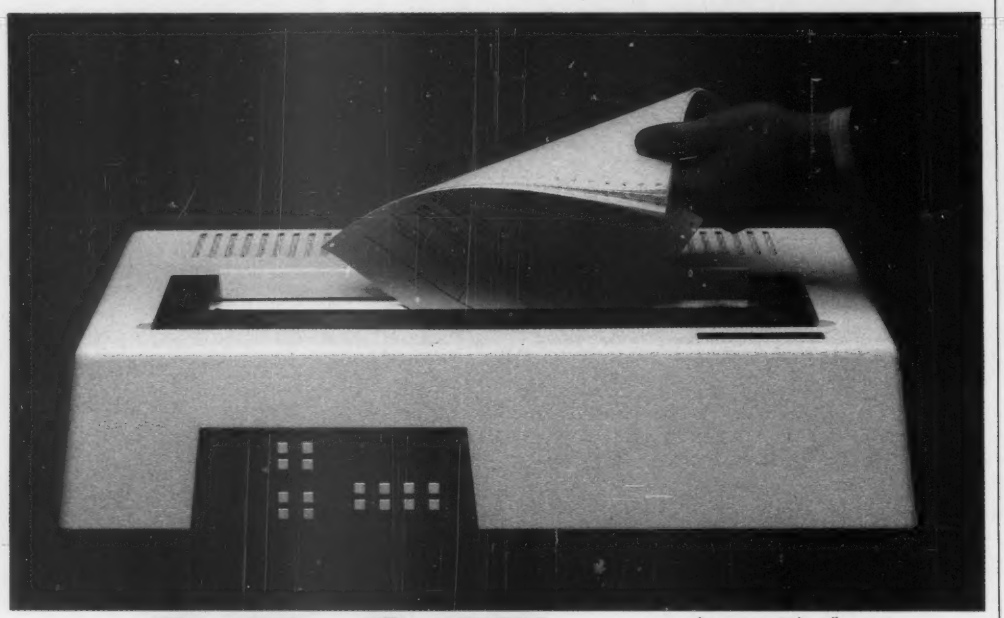
■ **Training.** Some firms are beginning to question the effectiveness of separate information center and MIS training.

Is it really the best use of limited resources to have the information center train users while the MIS training department trains programmers? Is it prudent to have the information center train programmers and users in PC technology while the MIS training department concentrates on mainframe-based training?

This dichotomy is fading. The need for efficiency suggests that merging training functions into one MIS training group may be a sensible route for many companies.

■ **Support.** Some organizations are using a help desk concept as a support mechanism. The help desk, staffed by computer professionals with a range of expertise, provides the first line of support to users. Users can call a single number with any question relating to hardware, software, production, operations or applications.

The sheer numbers of users within organizations has become more than most info centers can support effectively. Furthermore, the sources of snafus are becoming trickier to track as hardware and software interconnect. So, it no longer seems farfetched for the information center to take advantage of alternate sources of support



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SPECIAL SECTION: INFORMATION CENTERS

and to specialize in providing support for more advanced end-user computing needs that fall outside the scope of a help desk.

■ **Application development.** One of the hotly debated, often highly emotional subjects among information center staff members is whether they should develop applications for users. Many info centers have been against this idea because they feel that users who become dependent on the information center for developed applications will never learn to develop their own. But a growing number of information centers are convinced there is room for them to promote user independence and build user skills while these centers continue to create applications to support certain needs.

Both views represent an opportunity for application developers because of the number of potential applications waiting to be developed. PCs are rapidly becoming a suitable, and in some cases optimal, vehicle for developing user-driven applications. But developing such applications exceeds the abilities or inclinations of most users. Similarly, mainframe-based fourth-generation languages can be used to develop sophisticated applications that users can't develop themselves but that can be released to users when completed.

Some MIS organizations have responded to these opportunities by establishing departments responsible for the development of strategic information systems using fourth-generation languages. These systems are designed and developed by MIS and turned over to the user to operate. Retaining responsibility for development has two kinds of benefits. Operationally, MIS can ensure that these systems are written with efficient well-tested code rather than with runaway logic that takes hours to retrieve a few records. Strategically, MIS can ensure that such systems appropriately target business objectives.

As a result of working with users from all corporate areas, an information center is in the ideal position to identify the overlapping needs of multiple areas and to recognize areas where specially developed applications can support business needs.

■ **Data retrieval.** One of the most pressing information center responsibilities is gathering and reformatting data to make it usable and readily accessible to users. Rarely is production data ideal for user analysis; yet establishing a user-accessible environment on a large scale can be a development project of mammoth proportions. Many info centers are not staffed with technical heavies capable of such development. In addition, although information center staff is tuned into user needs and concerns, it is often not well versed in the idiosyncrasies and complexities of the corporate data base environment. Building an effective user environment, therefore, suggests a liaison of business analyst, data base and development experts from both the information center and MIS.

■ **Technology assessment.** When personal computers first appeared on the scene, the information center was the only group that cared enough to find out what they were about. MIS wanted no part of this movement and took no part in it. As an extension of this early involvement in a leading-edge technology, information centers have played a key role in the selection and implementation of micro-mainframe links and local-area networks.

> *"The information center still represents the enemy to DP because the center aids and abets end-user computing.*

In some companies, the information center is becoming the focal point for the evaluation of new technologies such as voice recognition and expert systems. Yet, this role of technological guru is one that many information centers are ill equipped to handle alone. Organizations that have established technology review groups with representatives from the information center as well as application development, systems support, communications and other areas are using an approach that is likely to become prevalent.

In spite of MIS reluctance to admit it and in spite of resistance at senior management levels, end-user computing is the only exciting thing happening in data processing these days. Industry observers spout predictions that end-user computing will make up anywhere from 60% to 90% of all corporate computing by the early 1990s. Yet, to whatever extent these predictions are true, they don't forecast doom for MIS. The challenges of managing end-user computing are growing, and this is causing the dividing line between information centers and the rest of MIS to become finer. There are some exciting times ahead for everyone.

Karten, president of Karten Associates of Randolph, Mass., is a former MIS and information center manager who now consults, lectures and writes on the management of end-user computing. She has published more than 50 articles on the issues of end-user computing.

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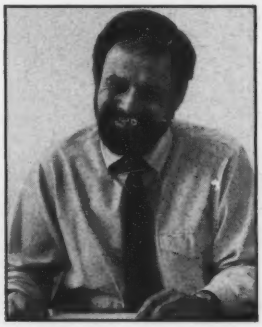

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Says David W. Smith, Marketing Services Manager for EMC, Computerworld was chosen for two reasons.

First, EMC selected Computerworld to reinforce the company's message in the minds of readers of machine-specific books and to get to the readers who didn't see the ads in other publications. *"One of our product managers pleaded for greater visibility and recognition for his products — the machine-specific books were not enough,"* recalls David. *"So we decided to try Computerworld, and the result was immediate."*

The second reason is that David has seen Computerworld ranked as the best MIS/DP multivendor book in machine-specific readership studies.

"So many DP shops use more than one machine," he adds. *"Computerworld addresses all markets, and we're getting responses in all five of our vendor categories."*

Since EMC started advertising in Computerworld, the number of phone inquiries actually doubled, David revealed. *"When an ad appears in Computerworld, business picks up tremendously. In fact, Computerworld is responsible for some of our more spectacular success stories,"* he adds. *"Business is coming directly from those ads; people are calling and ordering, and that's something you don't find very often in this business. One caller actually ordered three boards after reading our ad in Computerworld."*

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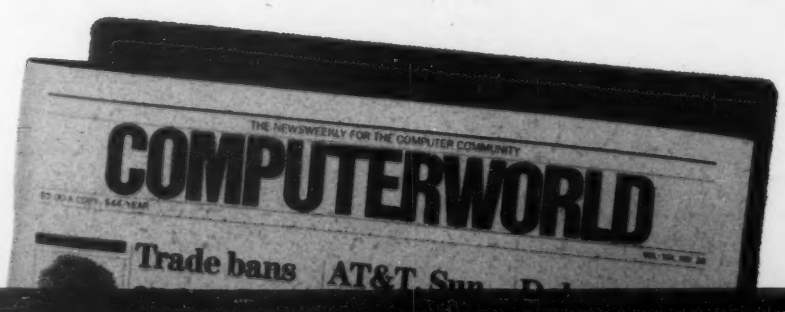

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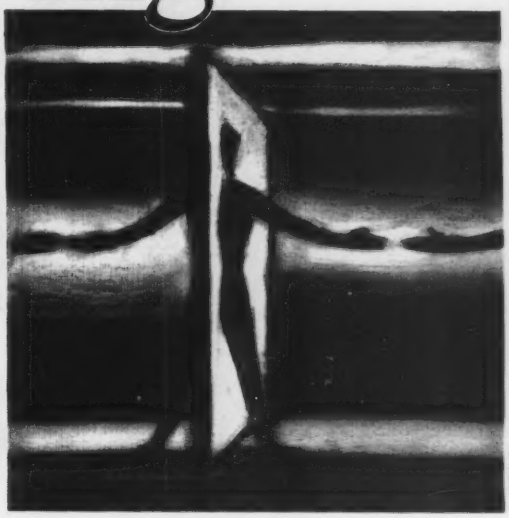
SPECIAL SECTION:
INFORMATION CENTERS

Satisfying MIS And Users



DAVE RIDLEY

·BY·RICHARD·MAKITA·

"Plan to put yourself out of business." That is what I would advise the person who manages the information center I once ran. I don't suppose he would like the sound of that, and I don't want him to suspect me of ill will, but I do think that he and his colleagues ought to be concentrating on doing just that.

Which is not to say this group is doing a bad job or that the information center was an unfortunate idea. What I mean is that today the goal of the information center should eliminate the need for its own existence.

The information center was conceived when the majority of dollars spent on computing were concentrated in large systems, when Cobol was still thought of as a productivity tool and when personal computers were a hardcore hobbyist's dream. An error message with more than one English word in it was considered user-friendly.

Today, more money is spent on micros than on any larger class of computers. Fourth-generation and natural languages are available though still not widely used by DP professionals. And although it may not seem like it while tearing through shrink-wrap packaging, microcomputer software has become considerably easier to use. Moreover, the PC has made its way into the lay environment. Anyone who watches that other tube or reads the papers has gradually grown accustomed to the machine. This demystification is of no small significance.

More direct and sustained exposure to computers has become commonplace in the classroom. Fewer people entering the work force are computerphobic. We are moving into the era in which the old guard executives who associated keyboards with secretaries are planning to retire. As a result of these factors, computing has outgrown the data processing department. The information center has helped ease some of the growing pains.

During the past 10 years, the information center has evolved beyond its original concept. That evolution can be characterized by the changing relation of the user to the computer. At first the computer was inaccessible to people outside the DP mystery guild. Then came interactive access through which people who had not spent the greater part of their lives in DP began to use the machine as a tool for working with information.

Eventually, the computer will assume more of the conversational burden in these interactive sessions by questioning and making assumptions and associations to serve as an expert associate rather than a reluctant assistant. Until then, the information center fills that role.

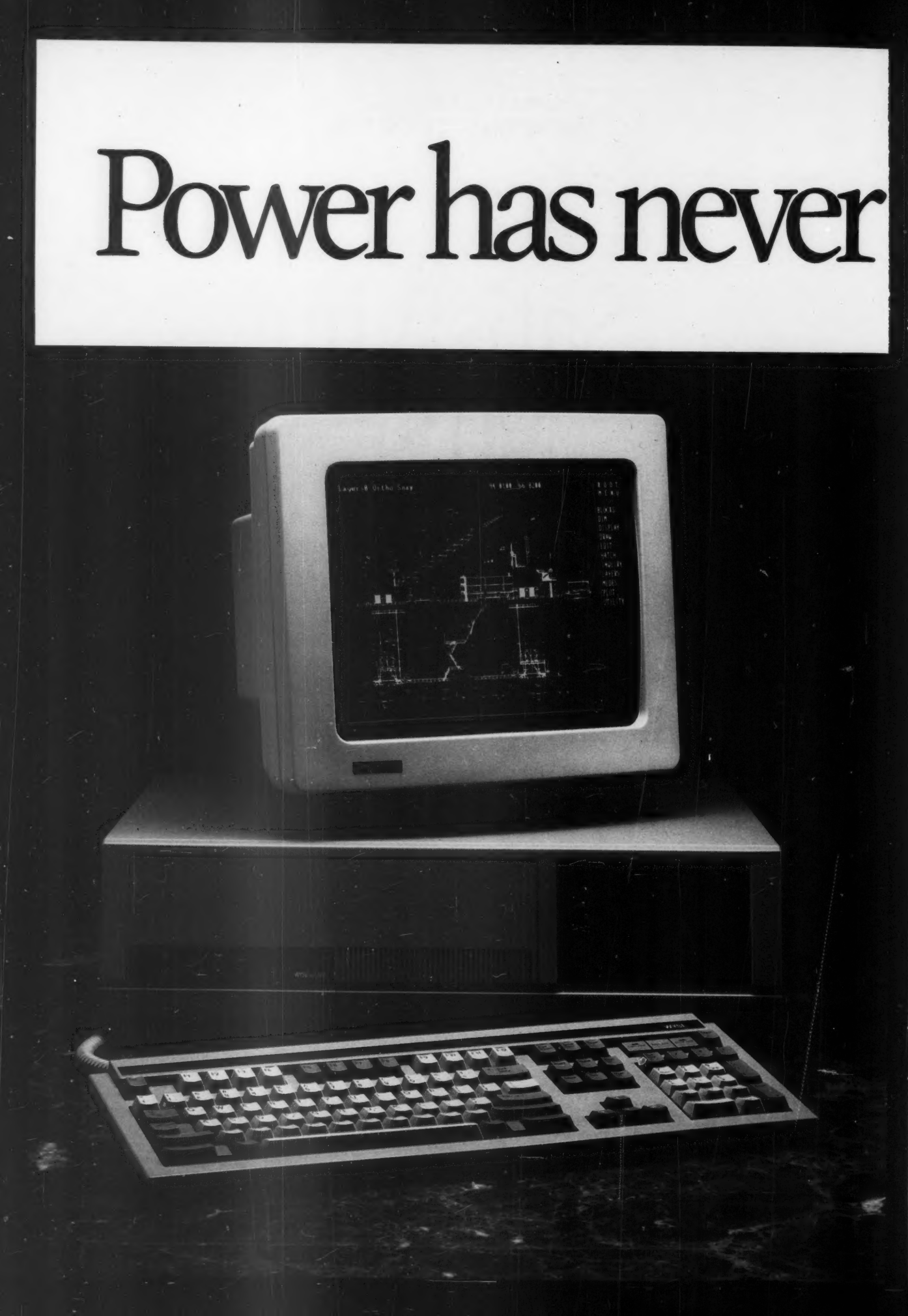
Because the task of expert associate is so time-consuming, so greatly needed and so personally gratifying, it is very difficult for the staff of an information center to see much beyond that role. Difficult though it may be, to look beyond that role will become increasingly important as the general level of computer competence grows and as the difficulty in using application software diminishes.

The center's greatest strength, an end-user orientation, may turn into its greatest weakness.
To keep from losing the forest for the trees, the information center should plan to broaden its scope to treat the organization as a user who requires assistance with the computer hardware to get the most value from available information.

In the interim, a preliminary task involves reaching people within the MIS/DP department. Ironically, as information centers developed strategies and found tools for helping end users, those discoveries were rarely passed on to or accepted by member of MIS/DP.

The problem was partly one of perception and partly one of politics. To the extent that information centers were identified with the idea of end-user computing rather than the broader notion of increasing the productive use of computers, it is not surprising that information centers were not

Power has never



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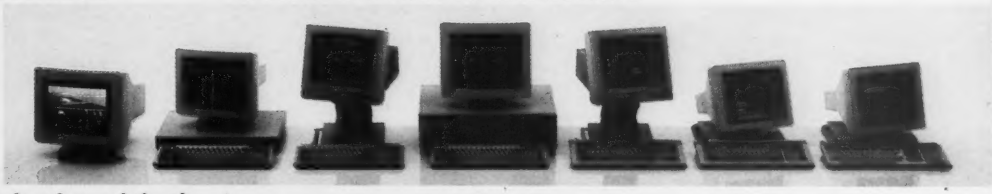

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CIRCLE READER SERVICE NUMBER 105

SPECIAL SECTION: INFORMATION CENTERS

accepted by DP personnel. The role of organizational politics in a realm of highly trained professionals need hardly be mentioned.

Potential client

Yet, the MIS department represents one of the most important potential clients of the information center. An information center should be more attractive to managers and executives than to any other class of users — and most attractive to managers in MIS/DP.

When the kinds of tools found in the information center are aimed specifically at DP professionals, the result is sometimes called the development center. But whatever the name, the idea is to use the power of the computer against its own inherent complexity. Passing that test will be necessary if the information center is to position itself for the kind of broad service that will lead to its disappearance.

While information processing has always gone on in all parts of an organization, the cost and difficulty of automating certain aspects of that processing resulted in the concentration of equipment and computing expertise in central data processing departments. As the economies of scale are shifting to what is called the economies of small and as the expertise is more widely dispersed, the information center can play a pivotal role in helping coordinate the distribution of processing throughout an organization.

The information processing infrastructure in most organizations today is multilayered. The mainframe still holds central position. Superminicomputers serve as senior systems in smaller organizations or as the primary processor in business units within larger corporations. Minicomputers and supermicros often serve specific departmental applications. Microcomputers connected via local-area networks provide service to working groups within departments. Individual PCs support stand-alone applications and serve as terminals to larger systems.

The complexity introduced by installing systems from different classes and from different vendors has been an argument powerful enough to prevent such installations in some organizations.

The economies-of-scale argument has further helped carry the day in favor of the mainframe mavens. But the full range of computing options is too rich not to take advantage of, even at the risk of fragmentation and isolation.

As valuable as it has been for the information center to *distribute* knowledge of computing, it will become increasingly important for it to help *unify* the organization's approach to data management. With its knowledge of information resources and the needs of individuals and departments, the information center is uniquely positioned to grow into this role.

The nuts and bolts

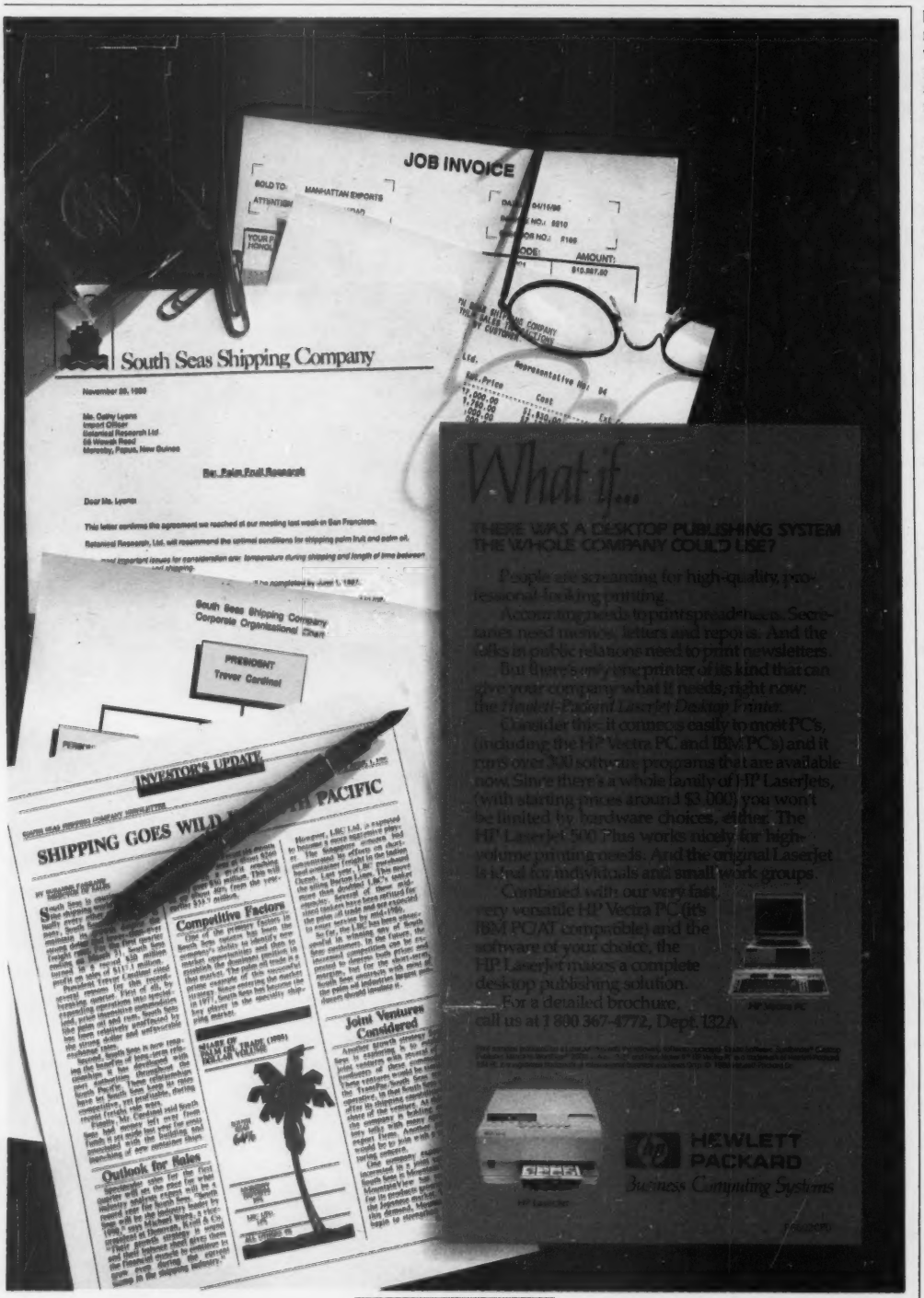
The mandate of many information centers seems to have been "know your tools," but nuts and bolts are, finally, more important than screwdrivers and wrenches. By concentrating on the data and working to build a coherent approach to gathering, maintaining and using that data, the information center can move itself into a pivotal place in coordinating the development of an effective corporatewide information system.

It is toward this end that information centers should be directed.

The increasing knowledge of end users, the gradual improvement of software and the growing importance of strategic information management all argue for the integration of the information center ideals into the MIS/DP department — and for the transformation of both into the much broader role of information resource management.

So, to the information centers managers of today I would say: Plan to put youself out of business — and give yourself a big raise when you succeed. ■

Makita, former manager of the administrative information center at Indiana University in Bloomington, Ind., is a senior research analyst with International Data Corp., a Framingham, Mass.-based research concern.



CIRCLE READER SERVICE NUMBER 109

SPECIAL SECTION:
INFORMATION CENTERS

Searching For The Right Product

DAVE RIDLEY

·BY·STAN·KOLODZIEJ·

These are not great days for information centers in general. More control from MIS, spending and hiring freezes and a creeping wait-and-see attitude have taken their toll on info center independence and risk taking. Under pressure from MIS, information centers are standardizing on fewer products and placing greater emphasis on security and testing.

"There's a trade-off with this new attitude," explains David B. Phillips, an ex-information center manager and now president of David Phillips Associates, Inc., a West Hempstead, N.Y., consulting firm specializing in information centers. "Two years ago, many information centers were chaotic in their product introductions. Some places would have 10 or 15 spreadsheet programs floating around. I used to dread the day a personal computing publication arrived at the office, because users always wanted the products the magazine reviewed. They can't go back to those days, and that's probably a good thing.

"On the other hand, some of the spirit of experimentation is gone. In many ways, information centers are even more entrenched now in acquisition, training and support functions. The trend to caution is blocking their progression to a more strategic role in companies."

Phillips says there is a good reason for the current cautious attitude of many info centers.

"In 1985 and 1986, information centers got called on the carpet to explain why they purchased thousands of PCs. The boss asked tough questions: How effective are the PCs? What benefits have they brought? Many info center managers went back chastened with a new edict from above: Cut back."

While info centers have been looking longer and harder at new products, some product areas are heating up, some cooling off and others still going strong after several years.

Info center mainstays include mainframe data base management systems (DBMS) from Information Builders, Inc. (Focus) and SAS Institute, Inc. (SAS); spreadsheet programs like Lotus Development Corp. 1-2-3 and Ashton-Tate Framework; and the ubiquitous Irma plug-in communications boards from Digital Communications Associates, Inc.

Both SAS and Focus have been available for a number of years. They first became popular within corporate MIS, which found them useful products when more info center-supported users wished to handle some of their own data retrieval and programming using mainframe data. Focus and SAS caught on with end users because they contain fourth-generation tools to make programming easier.

"SAS is simply a good number cruncher and handles things like regression analysis," says Dennis Pracht, information center manager at the Defense Systems Division of the Northrop Corp., Rolling Meadows, Ill. "It can also upload and download from the mainframe. SAS and Focus are menu oriented. They have their own internal format and can retrieve data from a variety of data bases. We looked at some fourth-generation languages for user programming, but I think a lot of them are overrated. You can do some good programming with SAS and Focus, and everything's in one package."

Another popular DBMS with info centers is Ramis, from Martin Marietta Data Systems.

"Our people use Ramis for creating data bases on an [IBM] mainframe," explains Ed Katterson, a vice-president and manager of micro support at Manufacturers Bank in Detroit. "Most of the mainframe access is through [IBM] 3270 terminals. Using dumb terminals leaves little room for creativity on the user side, but Ramis provides enough pieces to get some good data bases together."

Almost all the info center managers *Computerworld Focus* spoke with have either installed or are thinking of installing PC versions of these mainframe packages to bring some of their data massaging capabilities closer to users.

"We find good and bad points

SPECIAL SECTION: INFORMATION CENTERS

in this arrangement," notes Pete VanArsdale, manager of MIS services at U.S. Industrial Chemicals Co., Cincinnati. "With programs like [Information Builders'] PC Focus you can only link one PC to the mainframe per package. It gets expensive. You also need several separate diskettes to make the connection work. The good side is that the micro-to-mainframe arrangement is handled through one company instead of having to tie together a number of vendors' equipment."

It doesn't always work, however. George Buono, a vice-president at Manufacturers Bank, says the company had trouble getting adequate PC-to-mainframe communications as promised through Execucom Systems Corp.'s Interactive Financial Planning System, a decision support system residing on both IBM mainframes and PCs.

"Our credit analysts had all kinds of problems getting the right data to and from the mainframe," Buono explains. "It was crucial. The bank runs on financial analysis and 'what-if' projections. Finally we went out and bought some Irma boards. That worked."

Micro-mainframe links in demand

Micro-to-mainframe links are classified by Phillips as a hot market with information centers, and the recent Information Center Conference & Exposition held in Anaheim, Calif., seemed to bolster his point. On the trade floor the handful of products unveiled by vendors emphasized micro-to-mainframe communications. It is also a field that Phillips classifies as rife with confusion, cluttered with vendors whose products have proved disappointing to date.

"A number of factors are influencing micro-to-mainframe links in info centers," according to Phillips. "On the one hand you have this concern from MIS about good built-in security with third-party micro-to-mainframe packages. On the other is the strong dynamic that is pushing users to interact with the data from other users within their departments, outside their departments, sometimes even corporatewide.

"This is where the tension lies. Users are more sophisticated. Until the PC explosion, users were more conservative because they only knew about their own data on the mainframe. Now they realize how interdependent they are on the data from other company sources. MIS wants to pull in the reigns on communications, and users want to open it up."

Micro-to-mainframe links are an important area of communications that Phillips maintains is causing a bit of a falling out between info center managers and end users.

> *'Many info center managers went back chastened with a new edict from above: Cut back.'*
>
> **— David Phillips**
> **David Phillips Associates, Inc.**

"Info center managers are squeezed in the middle," Phillips says. "Managers have seen some of their solidarity with users fade over micro-to-mainframe accessibility. The whole problem has carried over into local-area networks [LAN], which are more recent. It's one of the reasons why LAN sales are stumbling."

A large part of the confusion with micro-to-mainframe communications is the complexity of the market. Plug-in boards are popular, Phillips says, but more users are seeing just how poorly they handle data extraction.

Another problem with micro-to-mainframe links, Phillips adds, is that no one vendor has yet risen to the top with the obvious solution of choice.

The same applies to LANs. Despite the success of such LAN vendors as Ungermann-Bass, Inc., 3Com Corp., Corvus Systems, Inc. and Novell, Inc., Phillips claims the fact that there are still no clear-cut LAN market leaders has definitely hurt their prospects with information centers. IBM's delayed LAN entry and general market disappointment with its Token-Ring Network has also helped put a drag on the LAN market, compounded by the lack of good de facto standards and security in networking software.

Phillips adds that he is in touch with a number of companies that have installed LANs, "but most are small and on a pilot basis," he says. "LANs are being scrutinized because info center managers know they are some of the hardest pieces of office automation to cost-justify."

Other products that have all but fallen to the info center wayside include integrated software packages such as Lotus's Framework and Symphony, which Phillips says users consider hard to use. They also sacrifice functionality at the expense of melding spreadsheet, data base management system, graphics, word processing and communications. Two integrated software products that seem to have found acceptance with users, however, are IBM's Topview and The Software Group's Enable.

Project management software, which Phillips says was a hot area with info centers two years ago, has faded in that market, but ironically, the slack has been picked up by many MIS managers who can now be seen at PCs putting together Pert and Gantt charts, resource spreadsheets and "what-if" analyses using products like Microsoft Corp.'s Project and the Harvard Project Manager.

One key product area with information centers is desktop publishing, which is also putting some stand-alone PC graphics software programs on the defensive.

A big reason desktop publishing appeals to many info center managers is that its cost savings can be more easily defined than savings with many other office automation technologies. Another plus is that desktop publishing can be accomplished with the installed PC base with little additional equipment required, except for perhaps a laser printer for quality output.

Desktop publishing also presents info center managers with a bargaining wedge to get more PCs into corporations. Because savings through desktop publishing can be quantified, many corporations can allow the purchase of new PCs on a publishing basis alone. Once they're installed, however, the PCs can also be used for a variety of purposes outside of producing newsletters and reports.

Once the domain of dedicated systems, PC-based stand-alone publishing software has climbed out of the word processing past and reached a new level of graphics sophistication. Software firms such as Knowledge Engineering, Manhattan Graphics Corp. and Ventura Software, Inc. are leaders in this market.

The role of computer-based training

Computer-based training (CBT) has snuck into many info centers as a means to off-load some of the burden of orienting and training users on new micro software. Companies such as Deltak, Inc., SRI International, Inc. and Advanced Systems, Inc. can provide software training programs covering most of the front-running commercial software packages as well as on-site training.

The market for CBT is growing as info centers feel the effects of cutbacks and staff shortages. A recent survey of 1,000 info centers in Fortune 1000 companies conducted by Crwth Computer Coursewares, a Los Angeles-based CBT firm, indicated that 57% of the info centers were currently using some form of CBT, while another 25% were exploring the possibility.

The main factor behind CBT, according to respondents, is individualized training because one-on-one training in most info centers is virtually impossible.

Not all companies are enamored of CBT, however.

"We use some Deltak courses," U.S. Industrial Chemical's VanArsdale says, "but for the most part we don't like to rely on formalized, outside training. We've found it better to develop our own quality training system using Focus. It's more immediate and accessible, and we understand how it's going to relate to our business."

Such products are only part of the big info center picture, however. Communications in info centers is as much a concern today between info center managers and MIS as it is between micros and mainframes. Probably more. It's a question of survival.

A recent information center conference, for example, focused much more on how to communicate to MIS the benefits of info centers than how to improve the lot of the end user.

"Information centers are at a crossroads," Phillips concludes. "They have to adapt and become data administrators with MIS, not just a support facility. If they don't, they'll die."

Kolodziej is a Computerworld Focus *senior writer.*

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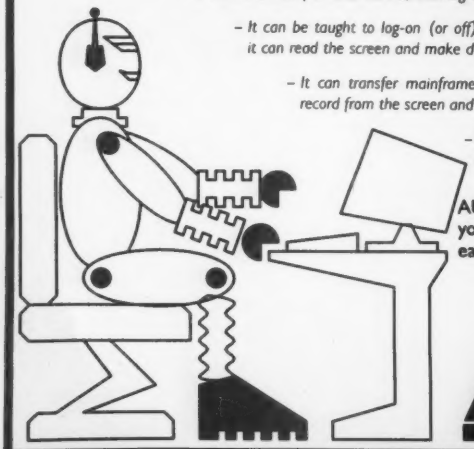

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CORPORATE ACCOMPLISHMENTS

Hale & Dorr: OA Suits Its Needs

The Boston law firm of Hale & Dorr is the image of the conservative legal profession. But when it came time to implement an office automation solution, the firm made a winning case for innovation.

·BY·REBECCA·HURST·

In the typically conservative legal profession, Hale & Dorr can be considered an innovator. The law firm became one of the first practices to use a computer when it installed an IBM System/3 in the mid-1960s. And when Hale & Dorr moved to office automation in 1980-81, the company's first requirement was that the software run on an arguably commercial operating system — Unix.

Founded in 1918, Hale & Dorr is, by its own account, the largest law firm in Boston. It has more than 220 lawyers and nearly double that number of employees in support roles including secretarial, paralegal, financial and data processing. The law firm has a general practice that concentrates on corporate litigation and real estate. "We probably have the largest litigation [practice] of any firm in the Northeast outside of New York," says John Wescott, a senior partner and assistant managing partner at Hale & Dorr.

Being a long-term computer user is helpful, explains Wescott, who has helped plan and manage Hale & Dorr's system. In a business sense his talent is useful because a number of Hale & Dorr's clients are high-tech companies. "I think most attorneys with technology clients like to feel that they are participating in the recent technology," he says.

However, it was internal, not external, requirements that caused the firm to purchase its first computer almost two decades ago. At the time, Hale & Dorr installed an IBM System/3 to handle several DP applications, including record tracking, bookkeeping and managing a compensation system designed 10 years earlier by one of Hale & Dorr's managing partners, Reginald Heber Smith.

John Wescott, a senior partner and assistant manager at Hale & Dorr

By 1980, the firm decided that it needed to upgrade its data processing functions and install an OA system. Hale & Dorr's data processing needs began to exceed the capacity of its System/3. The company also had a separate word processing center that was growing rapidly but could not keep up with demands. "We had more than 400 documents a day," Wescott recalls. "Even by adding operators we could not keep up with the work." The problem persisted, he says, even when the company had people working 24 hours a day, seven days a week.

Part of the problem was that there was no word processing outside the center. "Secretaries had IBM Selectrics," Wescott says. At the same time, some secretaries were not being fully utilized. "We had one of the highest secretary-to-attorney ratios of any law firm in the country," Wescott states. "We pride ourselves on that because it increases the productivity of lawyers. However, a lot of secretaries were just sitting around."

The Hale & Dorr solution consisted of two parts. First, it relied on a system the firm set up in 1977 in which secretarial clusters were responsible for a group of lawyers. Within these clusters, secretaries were expected to share work evenly. Secondly, when it looked at new computing systems, Hale & Dorr decided to include office automation and provide terminals to all secretaries.

Back on the data processing side, the firm realized that it would have to reprogram everything even if it purchased another IBM system. A consultant working with the company suggested that Hale & Dorr install Unix-based computers. "The consultant felt that Unix would give us more software portability so that in the future we wouldn't have to reprogram," Wescott says.

Wescott and Jack Cogan, now chairman of Hale & Dorr, worked with a consultant for nearly six months, educating themselves on computer systems and strategies. In deciding on a system, they were finally influenced by Davis Polk & Wardwell, a large New York firm that Wescott considers a pioneer in computers. The New York law firm was using Digital Equipment Corp. VAXs running a Unix-based OA system that was supplied by a client, Interactive Systems Corp. of Santa Monica, Calif. Wescott and Cogan decided to recommend to Hale & Dorr the same OA system running on two VAXs.

The next step was getting Hale

CORPORATE ACCOMPLISHMENTS

& Dorr to purchase the system. "All major decisions like that are made by the partners as a whole," Wescott explains. Both Cogan and Wescott felt that the law office was the perfect place for an OA system. "We do so much documentation, and a lot of the work was already being done by word processing. We also share a lot of common information on billing and client matters," Wescott explains.

'Convinced we should be aggressive'

However, the partners at Hale & Dorr were reluctant to commit to such a large expenditure, Wescott notes. "It was largely because of [Cogan's] leadership that we were able to implement the system. He had a lot of knowledge in the use of computers and was convinced we should be aggressive," he says.

After getting the green light, Hale & Dorr configured a system with two VAX-11/750s running the OA software used at Davis Polk & Wardwell. The firm soon discovered, though, that the software did not meet its needs. Because the program was provided by a client of Davis Polk & Wardwell, the New York law firm had all the resources of the company at its disposal, Wescott says. "For us it might not be the same kind of relationship."

The firm then reevaluated the capabilities it wanted in an office automation system and looked at what Unix vendors had to offer. "We wanted something that secretaries and attorneys who had never had any experience with word processing could use," Wescott explains. According to Wescott, the most complete office automation system based on Unix was Computer Consoles, Inc.'s (CCI) Office Power. In January 1982 Hale & Dorr worked out a deal with CCI to run the software on the firm's VAX equipment.

Hale & Dorr's Office Power version does not have a lot of the capabilities that today's versions have, Wescott says, particularly features like footnotes and a broader character set generally used in a legal office. However, the system has evolved greatly since 1982, he notes. "CCI has been quite responsive, and being one of the early customers, we served as input to a lot of changes."

Having solved its OA software problem, Hale & Dorr next discovered that it was quickly using up the resources of the two VAXs, Wescott says. As a result, the firm decided to put its OA applications on CCI minicomputers. "We started testing CCI's Power 5/20 in 1983, and we bought 26 Power 5s that year," Wescott says. "Each had 15 to 20 terminals attached to it." By the end of 1984, the firm networked the Power 5s, but by June 1985, Hale & Dorr began replacing them with CCI's Power 6/32. "The Power 5s were pretty reliable," Wescott says, "but there were too many logistical problems in backing up that many machines." The firm now has five Power 6/32s.

Hale & Dorr's DP needs were also expanding, and the firm added a VAX 8600 and a Microvax II to the 11/750s. With CCI machines handling the Unix-based OA applications, the firm now has VMS running on all three VAX minicomputers. The Microvax II still runs Unix and serves as a gateway between the DEC and CCI computers. "We basically have the Power 6/32s on an Ethernet local-area network and the VAXs on Decnet," Wescott explains, "and some Hale & Dorr members have written software that allows the Microvax to transfer files between the CCI and DEC machines." In addition, all terminals are connected to trunk cabling that goes to a Micom Systems, Inc. Intelligence switch that allows users to go between the Power 6/32s and the VAXs.

> *'If you give lawyers a powerful tool, and it's capable of making their work simpler, they'll find ways of using it.'*
>
> **— John Wescott**
> **Hale & Dorr**

Fear of rejection

In setting up the system, Wescott says, there were some concerns about how it would change the office and how well it would be received. Many of those concerns proved unfounded. In fact, there are more than 400 users, nearly two-thirds of the office, utilizing the computers. This compares with the 30 to 40 users on the system in 1983.

Because it has worked out well, Wescott says, Hale & Dorr has had a constant backlog of attorneys wanting terminals. "I have a waiting list to decide who gets terminals and who doesn't." In determining candidates, Wescott explains that he allocates terminals based on computer experience. Many associates and younger attorneys have gotten terminals over partners because they are used to working with computers. "We've tried to give them to the people who are going to use them the most."

A primary concern of the firm has been how easily users could be trained. "As it turned out, training has never been much of a problem. After CCI brought in the initial system, we've done all the training internally," Wescott says. Hale & Dorr chose two of its leading word processors to become in-house trainers. They provide four half days of training for secretaries. After this course, Wescott notes, most secretaries are operating effectively. In addition, he says, the course seems to improve their productivity and eliminate a lot of drudgery from their jobs.

Attorneys usually receive less training and on a more customized basis. Many attorneys prefer informal training by consulting secretaries. There is byplay among secretaries showing attorneys word processing skills, he says.

Most people at Hale & Dorr use terminals, but some lawyers use personal computers as well, particularly when they work from home. The firm also uses PCs for applications that are readily available.

Additionally, some clients and businesses have terminals or PCs with which they can dial into Hale & Dorr's system. For example, the bank has a personal computer that uses terminal emulation to draw information from the firm's system, Wescott says. Then the bank draws payroll checks based on that information.

Attorneys at Hale & Dorr have just recently begun using Office Power's VRS Search, a package that incorporates interfaces to the Westlaw and Lexis data bases as well as interfaces to telexes. Westlaw and Lexis have been commonly used for several years. However, before incorporating CCI's VRS Search, the firm relied on proprietary terminals supplied by the data base companies.

One applications problem that Hale & Dorr hasn't resolved yet is the benefit of developing packages in-house vs. purchasing out-of-house software. "We tried to develop our own packages in some areas and found it didn't help," Wescott says. On the other hand, he notes, "We could buy what packages were available, all of which have their drawbacks. When we bring a new package that somebody else did for law firms, we generally find out that we do things differently."

Instead of new application packages, Wescott explains, the firm requires more input from lawyers using generic tools on the system to provide tailored applications. "If you give lawyers a powerful tool, and it's capable of making their work simpler, they'll find ways of using it." Already, Hale & Dorr has begun developing a number of applications that use the tools of Office Power. Several of these applications are created using CCI's User-Defined Applications Program. "People have used that for setting up chronologies and litigation cases or indexing and retrieving documents," Wescott explains.

A computer buff

One attorney who has used Office Power tools to create several tailored programs for the office is Robert Mack. "He's a real computer buff," Wescott says. "We have some of his programs, called Mack Tools, on the system." Mack also prepares instruction sheets, Wescott notes. One such program is a Red Line package that is used to mark the changes made from one draft to another. This is a process lawyers have traditionally done on paper. Mack, who is a real estate lawyer, has also developed a real estate indexing system.

To document the system the firm provides its own book of Hale & Dorr applications and CCI's Office Power manual. And to inform users about new tools or software upgrades the firm is beginning a newsletter. In addition to new tools, Hale & Dorr hopes to get input on other capabilities users would like to have. "Then we could allocate our resources to see which we could develop ourselves, and CCI might want to do some."

Overall, users seem to be pleased with the office automation system. But implementing it before the OA market matured probably added costs in time, effort and dollars, Wescott admits. However, he says, the firm was right getting in early. "We could have waited five years until it had evolved. Then we could have bought it all at the same time," he says. "But then we wouldn't have the five years of greater knowledge and sophistication on the part of our user community."

Hurst is a Computerworld Focus *senior writer.*

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CIRCLE READER SERVICE NUMBER 152

DB2 UPDATE

Good For What Ails You?

·BY·PAUL·R.·HESSINGER·

GEOFF O'CONNELL

Using information systems as a competitive weapon has become a legitimate, if not essential, business issue. Corporations are looking for information technologies that will not only act as this weapon but will also automate and integrate an enterprise's application portfolio.

No single tool or approach has been proven fully capable of sustaining an attack on the seemingly infinite applications backlog. But something dramatic has begun to happen as many information system organizations search for a cohesive element in a systems integration strategy. The data base concept is experiencing a renaissance. Old values like data resource management and data-driven application design — considered too time consuming to support new, fourth-generation approaches — are reemerging as both framework and foundation for integrated, data-driven system projects.

For many corporations, the data base has been primarily a technical, background issue in the development of data processing systems. As the frequency and intensity of industry experiences with fourth-generation, integrated software increases, the mythical nature of the corporate data base concept is being transformed. A data base should now be approached as a pragmatic strategy for planning, designing and implementing integrated, data-oriented systems that are key to a business growth plan.

Software technology is clearly an important dimension of both a data-base-oriented systems strategy and the effective use of a data architecture. Application generators, information generators, relational data base management systems (DBMS), data dictionaries and so on are essential elements of a systems technology architecture component of an information architecture.

The practical implementation of relational products like IBM's DB2 is emerging as a key management issue with regard to information systems. Management is considering whether DB2 will be the enabling technology in a particular installation so that systems integration projects will rise above the muddle.

Corporation are asking tactical questions like the following regarding DBMS:

- Should there be one or more DBMS?
- Is there a performance threshold for relational DBMS?
- Does a successful transition to an integrated, data-driven environment employing a variety of IBM and non-IBM application development and information processing tools depend on an industry-standard, data manipulation/definition language such as SQL?

The answers to those questions? More than one DBMS is OK, probably not and probably yes.

A brief analysis of the demographics of the IBM DBMS user will bring to light important items for organizations contemplating a relational DBMS implementation and/or a transition to an information architecture environment.

In July 1985 the number of DB2 licenses became substantial, but users were undertaking little production activity and were not seriously considering migration from IBM IMS to DB2.

By early 1986 three significant things happened. First, major installations did begin moves to replace IMS or complement it with a second DBMS. Here, DB2 was the DBMS of choice but non-IBM DBMS products also fared quite well. Second, a definite shift to production transaction processing applications built with DB2 was under way. Third, a viable SQL interface in both IBM products and non-IBM superstars such as Information Builders, Inc. Focus began to emerge.

By mid '86, strategic deliberations about DB2 and its relationship to IMS gave way to tactical deployment of the technology. The growing list of non-IBM, fourth-generation language tools that supported SQL further fueled this deployment. For those IMS installations that installed DB2, the lion's share of new development focused on DB2, except for extremely high-volume, mission-critical applications.

As 1986 enters its twilight, the

DB2 UPDATE

DB2 user population has reached the multiple hundreds level (as an evasive IBM spokesman referred to the 900-plus enterprises that have installed DB2).

In turn, the IMS user base has begun a gradual erosion that will ultimately settle in the range of 900 to 1,000 enterprises continuing to use IMS well into the 1990s. DB2 appears on its way to the IBM target of multiple thousands of users and will gain 80% of the current IMS base.

Other vendors, take heart

Applied Data Research, Inc. (ADR), Computer Corporation of America, Cincom Systems, Inc., Cullinet Software, Inc. and Software AG of North America, Inc., take heart. As the focus on integrated, data-driven systems supported by relational DBMS technology intensifies, users are not necessarily looking for DB2-only solutions.

But what about DB2 applications?

Four major categories of use can be identified for the 900-plus DB2 users as follows:

- DB2 as an experiment. Perhaps too much has been made of IBM's six-month, free-trial program for DB2 by competitors looking to undermine industry confidence in the product. On the other hand, the try-it-you'll-like-it tactic has worked. A reasonable guestimate suggests that one-third of the current DB2 user base is experimenting with DB2. In many cases, the experimentation creates a second category of DB2 applications.
- DB2 as a repository for metadata. As organizations invest heavily in data analysis/modeling projects, they find something missing — a place to put the data contained in data models. What better place to store relationship data than in a relational DBMS?

Before actual application projects were attempted with DB2, it became the repository of data structures that an application would operate against, a directory of information available to users and a mechanism for positioning SQL not as a fourth-generation language but as a basic data definition/manipulation and control language.

Several major international banks outside the U.S. have viewed this repository capability as the first step in a relatively complete migration from IMS to DB2 over a several-year period.

- DB2 as a first DBMS for an installation. There are a surprising number of installations that have never even flirted with a DBMS or have let a DBMS go dormant that have also implemented DB2 as their primary data base technology. These organizations use DB2 for a broad variety of applications that defy definitions like "production" and "end user" and give new meaning to the concept of integrated, data-driven systems. On the downside, many of these installations jumped headlong into DB2 and did not heed the words of E. F. Codd and other relational gurus.
- DB2 as an architecture for systems integration. A number of DB2 users are mature and sophisticated technology implementers. In these situations, an enterprise's application portfolio may be quite stable, particularly at the transaction processing level. As new requirements for these production applications develop, the need for distributed data access (from a personal computer, departmental system or both) and/or a tighter integration between transaction processing and analytical/reporting/query functions becomes more prevalent given advances in other technology areas (workstations; the departmental systems arena where Digital Equipment Corp. has made a dramatic resurgence of late; and the office systems environment and its interrelationship with traditional data processing).

> ”
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> *What is the Achilles' heel of DB2? No surprise here; it is clearly the application generator area.*

While DB2 cannot support all these requirements, many users are employing it as both an enabling technology and a strategic framework for integrating information systems. DB2 is allowing many users to recognize that a practical implementation of relational technology can be a driving force in architecture-oriented efforts.

IBM's direction with DB2 and, perhaps more importantly, with SQL must be carefully considered. The dual DBMS (IMS and DB2) structure remains a focal point of IBM's data systems strategy. With a subtle intensity, the focus is shifting toward DB2 as a complete data base system. The continued support of IMS is an important technical consideration because it appears that IMS will figure prominently in IBM's long-range, large systems strategy, if only for a select group of enterprises that fit the large-systems, high-volume transaction processing mold. Release 2 of DB2 has all but eliminated serious concern over DB2's performance.

The Achilles' heel of DB2? No surprise; it is clearly the application generator area. The trade-offs between IBM application development tools and independent offerings that are more powerful are becoming clearer. IBM Cross System Product (CSP) is not a bad tool. But, it certainly does not provide the same opportunity for productivity improvement as other products (with the important caveat that tools are just tools

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CIRCLE READER SERVICE NUMBER 151

— there is more to an application development productivity effort).

A good example of why CSP does not provide productivity improvement? It does not have a reasonable interface with DB2. Furthermore, IBM readily admits that the dictionary element of CSP cannot be shared within an application project effort. It is these issues that cast doubt on IBM's "strategic emphasis" on CSP. If it so strategic, why isn't there a better way to leverage DB2's power?

Decision born out of fear

A CSP decision is more often than not born out of a fear of straying too far from the DB2 family. But as independent products provide powerful DB2 facilities (as they no doubt will in the near term and will have to by first-quarter '87 if they want to survive) and IBM does not enhance CSP, DB2 installations will have to look to non-IBM offerings. From a different perspective, however, CSP's shortcomings and IBM's overly patient effort to correct them leads some to suspect that IBM has a hidden agenda dealing with the longe-range direction of DB2.

Advocates of ADR, Cincom, and Culinet technologies will emphasize the tactical importance of the dictionary component of each vendor's software architecture. DB2 clearly has a tactical weakness in this regard — DB2's catalog is not fully active and integrated, particularly from an applications viewpoint. But is the catalog a strategic weakness? Does DB2 function as a repository and provide an integration facility for dictionaries associated with application development and environment control products that will be used with a DBMS? As noted above, DB2 users are either anticipating IBM's hidden agenda or are recognizing an inherent aspect of DB2.

IBM's direction for a DB2-based system repository product is becoming clearer. Announcement of the first stage of such a product is imminent but, unless it is viewed within an architecture context, may prove disappointing to some users.

From a strategic perspective, speculation about a repository reinforces two additional items on IBM's agenda — the standardization of SQL and the emergence of DB2*, an IBM-developed DBMS for the expected PC2 intelligent workstation. While conservative speculation suggests that a deliverable DB2* program product is off in the future, component deployment of technology that will support DB2* is already under way.

Beyond the current focus on DB2 as a rapidly maturing, full-function relational DBMS that has several tactical weaknesses, it is difficult to discuss SQL, the repository and DB2* separately. Therein lies both the competitive challenge for other vendors and an architecture mandate for users.

Is the use of DB2 a guarantee for success in integration? Certainly not. An understanding of the concepts that are coming together in a DB2 environment is invaluable in establishing an architectural framework for an organization's integration efforts.

Hessinger is vice-president of research for Computer Task Group, Inc., a professional services and consulting firm in Buffalo, N.Y. He is responsible for the company's ongoing investigation of developments in data base management and application development system technologies.

DB2 An Asset For U.S. Bank

A major U.S. bank's experience is becoming typical of data-driven integration projects. .

The bank identified a key functional business area, relationship management, which was in need of an information overhaul.

Not much was known about the data required for automated relationship management applications that had to be highly integrated to compete with similar systems offered by the bank's competitors. The bank called for a user-driven approach, and a multilevel data modeling method was assembled by a data administration group that had been previously uninvolved in information planning and application projects.

The data administration group had been acting as more of a research and development function, investigating automated tools for data-driven systems planning and application design. Until the need for the mission-critical system developed, these tools were treated as nothing more than R&D experiments instead of catalysts for an information/application engineering approach to systems integration.

After three years of acceptance of a data-driven philosophy, replacement of tools that did not work well, adjustment of supporting methods and several carefully controlled technical pilots, flexible data bases have been implemented under IBM's DB2 relational data base management system.

A full-fledged information architecture program is now in place with DB2 acting as an overall data traffic cop. The critical nature of data analysis with a relational DBMS within an overall architecture was reinforced.

Overall, the future for these type of architectural approaches to information integration is becoming brighter and brighter. Data resource management methods are maturing. Powerful automated support for data planning, data modeling and data-driven integrated application development is being incorporated into these methods.

— Paul R. Hessinger

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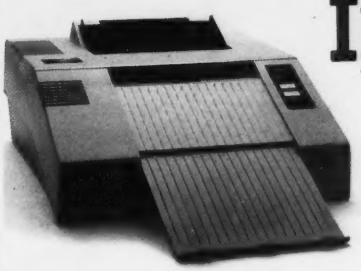

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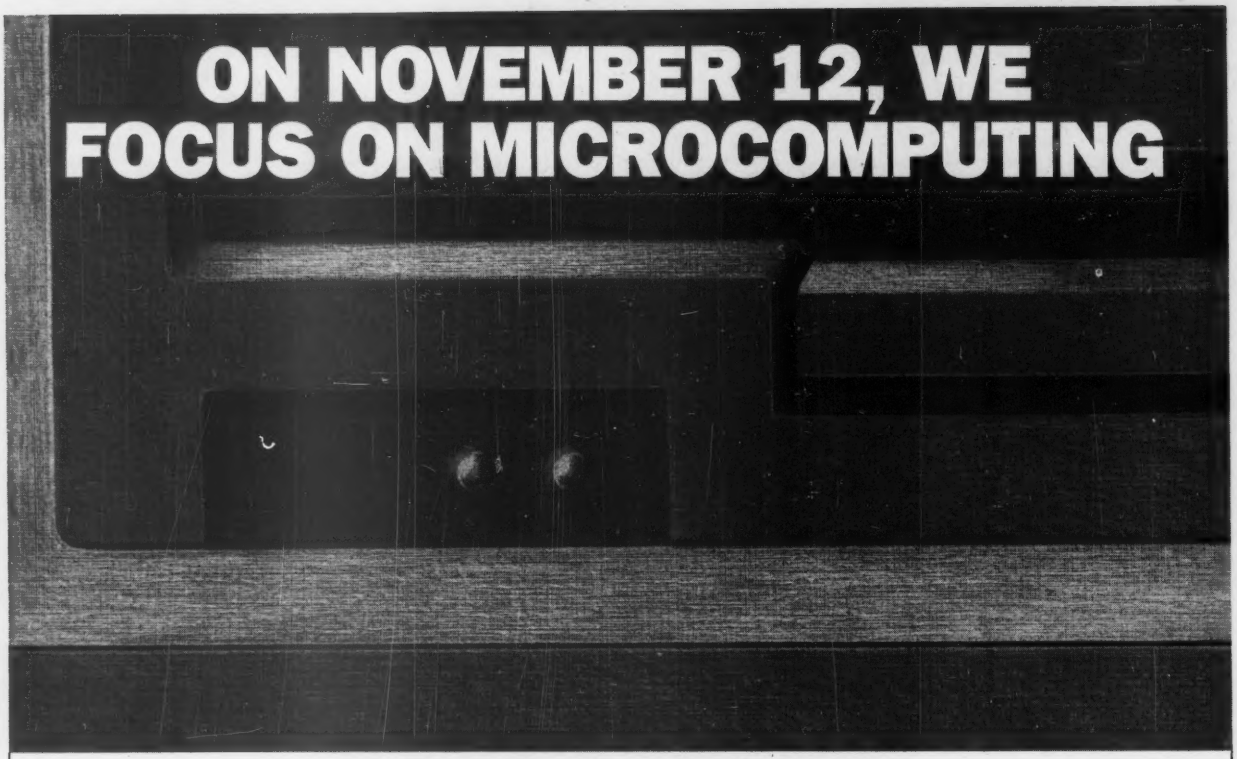
ON NOVEMBER 12, WE FOCUS ON MICROCOMPUTING



Not long ago, no one outside the computer industry had ever heard of a micro or personal computer. Nor would anyone have guessed that micros would be found in abundance on desks all over the business world.

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In November we'll devote our special section to one of the newest and most productive applications for the micro — desktop publishing. We'll look at what's available, what's still missing, and where the market is going.

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VOICE/DATA TOOLS

Integrating Voice & Data

·BY·JOHN·VACCA·

Information is a critical tool in today's business environment. A variety of methods exist to connect a user to the information sources and services he may need.

These methods include private branch exchange services, integrated voice/data switching, integrated workstations, personal communications software, integrated voice/data terminals and applications processors. There is a network of integrated voice/data systems that a workstation user may need to access. Some users may be attached to one system all day long (that is, a host application or text processing system), while others may need to access multiple sources for brief periods of time. Still others may need personal computing capability and file or print servers.

■ **PBX services.** Almost everyone can benefit from integrated text processing and telephone messaging through the use of a PBX.

A PBX system is uniquely suited to provide organizations with services that integrate voice and data. It establishes an integrated communications path between devices terminated on its I/O ports by receiving, processing and transmitting electrical signals. Integrated devices connected to a PBX include voice communications terminals (telephones), data terminals, voice/data workstations, computers, peripherals, gateways to public and private voice or data networks and other PBXs.

Thus, PBXs help software applications interface to low-level utilities and present the end user with an interactive, high-level interface. Each application translates user commands at the application level into coordinated actions among the software utilities to produce an end-user service.

■ **Integrated voice and data switching.** Choosing an integrated switching option for an individual requires understanding that user's voice and data workstation needs, knowing what types of data resources and servers he needs to access and understanding how those resources can be used most effectively.

For example, IBM and Rolm Corp. provide a variety of integrated switching options and capabilities to meet the information needs of users. The most prevalent is direct attachment through a workstation controller such as IBM's 3274 or to a departmental system like IBM's System/36.

There are additional integrated switching options available, however — a PBX switch and a local-area network (LAN), for example. These options support the attachment of integrated voice/data terminals and the ability to access information sources. To choose the best solution, one must understand the characteristics of the user, the resources he needs to access and the type of work he is doing.

Let us look at the typical candidates for each type of integrated voice/data switching beginning with the most prevalent switching method today.

Users of direct-attach integrated voice/data switching have a need to access a single host or departmental system. They may also need to occasionally access other hosts in a network.

A person's use of the system is dedicated or done in a high-volume interactive processing mode. If a user's workstation is a personal computer, he may transfer files to and from the host, but this is not a primary requirement or function.

In addition, this user may be a candidate for direct-attach switching because of specialized workstation needs such as full color, graphics or multiple-session support as provided by various terminals like IBM's 3270 Personal Computer or 3290.

For a user with some or all of these attributes, the best integrated voice/data switching option would be direct attachment.

A candidate who uses LAN integrated voice/data switching probably has a significant need to use file and print servers and to share voice/data files with other members of his work group.

His day-to-day activities would include PC-to-PC file transfer on a frequent basis or the transferring of large files. Most of his communication would be with other LAN resources, but he may have the need to access resources such as public data services that are not on the LAN.

The user of PBX integrated voice/data switching most likely would require access to multiple information resources. The main function of the PBX is to provide switched access to multiple host targets and shared information.

So, as one would expect, the primary characteristic of a candidate for PBX attachment is the need to access multiple targets, local and remote, or to use public data services like Dow Jones News/Retrieval or Source Telecomputing Corp.'s The Source.

A user with these needs is in a position where he must make informed business decisions and must get the information required to make these decisions from whatever source is available.

A user would be likely to make moderate use of a variety of resources and would only occasionally require file transfers (usually of small files only).

The user's workstation needs may be quite varied, ranging from a basic asynchronous ASCII terminal to a PC or even to an integrated voice/data terminal.

■ **Integrated workstations.** Integrated workstations combine a digital telephone with a full-featured microcomputer. The microcomputer usually includes a processor, semiconductor memory and disk-based mass storage. The integrated workstation offers all of the functions of the integrated voice/data terminal and can also execute application programs. The integrated workstation connects to the PBX over the link used with the integrated voice/data terminal. Alternatively, high-performance units can offer an option for a high-speed interface. With the addition of a mass-storage disk, the block diagram of an integrated voice/data terminal looks like that of an integrated workstation.

A new concept for most people, PBX workstation switching is the ability to attach workstations to the PBX and use the switching capability of the PBX to connect the user to his desired resource.

An end user with a PC or nonprogrammable ASCII terminal can be switched to the PBX. The primary interface is via a data communications module in a digital telephone. This provides digital switching up to 5,000 feet from the data communications module to the PBX using a single twisted pair of wires that provides a 256K bit/sec. link to the integrated workstation. It supports simultaneous integrated voice and data (either 64K bit/sec. synchronous data or 19.2K bit/sec. asynchronous).

Using this attachment with the power of the PBX gives the user access to multiple targets like LANs, minicomputers or public data services. Thus, a switching capability is used to access multiple targets, local or remote.

For example, there are desktop devices that are also PBX attached. These workstations provide all of the switching flexibility.

These devices can also use personal communications software to provide an easy-to-use interface to the user.

■ **Personal communications software.** Personal communications software assists with setting up integrated voice/data switching and buffers the user from needing to know much about how the PBX and computer systems work. It provides sophisticated integrated voice/data switching assistance to the user. This software gives the user the ability to predefine different terminal profiles so that he can use the PBX to switch to multiple targets with different environments. With one keystroke a user can make a connection, and with another keystroke he can automatically log on. There is an easy-to-use file transfer capability provided by the personal communications software.

The user also has some very sophisticated personal productivity tools, such as the ability to store more than 300 names and telephone numbers at his terminal. The user can also sort and select phone numbers by name or identifier tag and then automatically dial the phone. For example, if the user wanted to call someone in Houston but could not remember that person's name, he could find it by looking under Houston. The number is then automatically dialed.

■ **Integrated voice/data terminals.** Integrated voice/data terminals combine a data terminal with a digital telephone into a single unit. These units are usually proprietary devices that are specific to a given PBX manufacturer and communicate with the PBX over a proprietary voice/data link. Fully integrated links multiplex the voice and data and control bit streams onto a common set of wires.

The digital telephone requires 64K bit/sec. (full duplex) for the digitized voice circuit. The data connection is typically a 16K bit/sec. to 128K bit/sec. link that may be circuit or packet switched within the PBX. The control link can require from 8K bit/sec. to 64K bit/sec. of bandwidth and is used to send commands and status information between the integrated voice/data terminal and PBX. Commands from the PBX cause the integrated voice/data terminal microprocessor to activate the ringer and flash indicator lights of the telephone, while the integrated voice/data terminal's status is constantly reported to the integrated voice/data terminal interface in the PBX.

With additional integrated voice/data terminal memory and utility software, the integrated voice/data terminal can provide services such as electronic directory with autodialing, personal calendar and message display service. The integrated voice/data terminal also permits the user to store a number of data call example configurations and allows the user to reconfigure automatically the integrated voice/data terminal's internal data call examples with a given host's parameter set using a simple high-level command.

On a typical voice/data terminal, the telephone handset is located on the keyboard of the display console. A newcomer to this market, Liberty Electronics USA does not provide a handset; instead, a standard telephone set attaches directly to the terminal's integral modem. One key feature common to virtually all of the units now being offered is compact size.

Depending on the degree of sophistication that the vendor has built into its product, there are several other features available to attract the executive user — an electronic appointment calendar, a reminder list function, a "call me" list function, voice recording (dictation) and a built-in calculator. In addition, some private automatic branch exchange (PABX) vendors have introduced integrated voice/data terminals specifically designed for use with their PABX products, for example, Northern Telecom, Inc.'s Displayphone SL-1, AT&T's BCT 515, Mitel Corp.'s Superstation and Rolm's Cypress.

■ **Applications processors.** Integrated voice/data systems are often controlled by dedicated application processors operating in conjunction with the PBX control processor. Application processors can perform protocol conversion, text processing, image processing, voice compression and storage, file storage and data base management. In an integrated system, application processors are closely coupled with the PBX common control processors and have access to the system configuration memory. The close coupling between application processors and PBX common control is the key to functional integration. An example of this would be an integrated voice messaging system.

Integrated voice messaging systems interface to the PBX common control processor, which can signal the voice messaging systems if a user's phone is busy or does not answer after a predetermined number of rings. When this occurs, the system automatically connects the caller with the messaging system, which answers the user's phone with a standard or personalized response and instructs the caller to leave a message. Provided that the user's telephone, integrated voice/data terminal or integrated workstation has a message-waiting indicator, the system provides the user with a visual indication that messages have been received.

One of the most important developments in voice messaging technology is the ability to integrate voice messaging systems into a PABX or Centrex system. When the systems are integrated, each voice messaging system is given an access number — the pilot number of a distribution group within the switch. When voice messaging system subscribers want to access their mailboxes, they call this access number.

An important aspect of a voice messaging system is remote access, in which users can get into the system from outside the associated PABX. In most cases, that requires a special number dedicated exclusively to the voice messaging system.

The future of integrated systems

New PBX architecture and enhancements to existing integrated voice/data system products are being introduced at a rapid rate. This trend may be expected to continue, for once an integrated system for the transmission, switching and storage of voice and data is in place, development of applications can proceed rapidly. In many cases, new applications are supported by adding new software to existing equipment.

One of the first areas likely to receive attention is the integration of voice with text messaging and document preparation/distribution systems. Voice-enhanced document handling systems can provide highly integrated information exchange services. For example, a user might dictate a letter into the voice system, which would be stored and forwarded to a document preparation station such as an integrated workstation. The integrated workstation operator could then load a document creation program into the integrated workstation from the system file server and prepare the document. The draft could be sent to the originator's integrated voice/data terminal or integrated workstation for inspection. The originator could then amend the text directly or add voice comments to a voice-annotated text file.

Although the actual text and voice comments would be stored on different systems, the data would be integrated and transmitted simultaneously to the typists. Once the draft was approved, it could be forwarded to a system printer or intelligent copier for printing, duplication and distribution to outside parties. System users could receive a voice-annotated copy of the letter electronically, using the message-handling subsystem.

A number of PBX vendors have already developed all or most of the subsystems that would be required to support a voice/data enhanced text system or other integrated service. One manufacturer recently reported an experimental PBX-based system that transmits, stores and forwards handwritten input that is entered on an integrated voice/data terminal equipped with a special input pad. Such a system could support a number of potential applications.

Two additional features likely to be incorporated into future integrated PBX LANs are image processing, speech recognition and synthesis. Integrated speech from text input has great potential and is a more straightforward problem than the creation of text from natural speech. While integrated text generation, speech synthesis and even speech recognition applications will require improvements in processing and storage to realize cost-effective systems, most integrated digital PBXs will be able to support these applications by adding an application processor to existing switching, transmission and end-user subsystems.

Vacca is a free-lance data processing writer based in Topeka, Kan.

Managing Integrated Systems

In March 1986, the IBM Dallas Informations Systems Management Institute, an IBM educational center, released its preliminary study team findings of the management processes of integrated voice/data network management.

The study team was directed to study all aspects of telecommunications including data, voice, integrated networks, video and any related technologies. The key focus was on voice/data integrating networks.

Preliminary results from the study are the following:

- An understanding of telecommunications management and how it supports most enterprises.
- Development of a telecommunications management process model to identify the decisions and tasks involved.
- Definition of the data required to make those processes effective.
- Definition of alternate organizational approaches.
- Validation of the concept with detailed analysis at several IBM locations.

The study team represented the IBM organizations involved in either actual telecommunications delivery or in marketing telecom products.

The study is ongoing as of this writing. Nevertheless, preliminary findings show that the management of integrated voice/data networks is an increasingly visible function in many organizations. Managers have come to realize that the success of their business depends on the quality of their communications.

Perhaps the most important benefit of the study was to show the extent and ease with which the integrated voice/data system may be managed, measured, controlled and configured using shared resources.

— John Vacca

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OFFICE AUTOMATION PRODUCTS

Products To Tie IBM PCs Into DEC Office Systems

MAYNARD, Mass. — Digital Equipment Corp. has announced three products aimed at tying IBM Personal Computers into DEC office systems.

The Vaxmate is a networked personal computer designed to support work group, departmental and organizational computing. The Vaxmate is IBM PC compatible and is equipped with an 8-MHz Intel Corp. 80286 processor. The computer also comes with 1M byte of random-access memory (RAM), a 5¼-in., 1.2M-byte diskette drive and built-in Decnet/Thinwire Ethernet local-area network support. In addition, the Vaxmate was designed to accommodate 2M bytes of extra memory, a 300, 1,200 or 2,400 bit/sec. modem and a math coprocessor board.

The Vaxmate system hardware costs $4,045. A software license costs $250.

PC All-In-1 is a DEC Microvax II-based system that allows up to 30 isolated DEC and IBM microcomputers to be part of a DEC integrated office system. The PC All-In-1 comes with 5M bytes of RAM, an Ethernet controller, three 71M-byte hard disk drives and a 95M-byte streamer tape. All personal computers supported by the PC All-In-1 must have a minimum 10M-byte hard disk and 640K bytes of main memory and must be configured with a Decnet-approved Ethernet card to be connected via Ethernet.

PC All-In-1 is priced at $81,160 and includes software and services to support up to 30 personal computers.

VAX acts as server

DEC's VAX/VMS Services for MS-DOS software allows a DEC VAX, Microvax or Vaxmate to act as a server for a group of Vaxmate PCs in a Decnet Thinwire Ethernet network, enabling Vaxmate users to use the systems' facilities and services. DEC added that its VAX/VMS Services allows sharing of resources between VMS and Microsoft Corp. MS-DOS and allows for recently introduced DEC server-based license applications.

VAX/VMS Services for MS-DOS is available in three configurations: for the VAX family running the VMS operating system; for the Microvax running the MicroVMS operating system; and for the Vaxmate. It is priced from $650 to $19,500, depending on configuration.

For further information, contact Digital Equipment Corp., Maynard, Mass. 01754.

Circle Reader Service Number 282

HP System Gets Tools

PALO ALTO, Calif. — Hewlett-Packard Co. has introduced four new products for its Personal Productivity Center integrated office system.

HP Deskmanager, Version B, provides for the integration of data processing applications with HP's office automation products, enabling spreadsheets, graphics and word processing documents to be sent to other users on the Personal Productivity Center via electronic mail.

HP added that the Deskmanager's transparent file conversion allows users of different application programs to exchange data. An electronic forms processing capability enables users to speed up data collection and distribution tasks. The HP Deskmanager, Version B, is priced from $4,800 to $12,000.

HP File/Library is an option to HP Deskmanager, Version B, and is a community filing and archival application featuring a selection of catalogs designed to index any document or file held either inside or outside HP Deskmanager. HP said users of File/Library can access and share data throughout an entire work group, reducing the need to keep duplicate copies of files in multiple locations. HP File/Library is priced from $2,800 to $7,000.

Tool to improve efficiency of users

HP Schedule is a meeting and resource management tool designed to improve the efficiency of individual users. Scheduling of people and resources is based on data retrieved from users' electronic calendars, and an automatic clash reporting feature eliminates the scheduling of an individual for simultaneous meetings. HP Schedule is priced from $1,200 to $3,000.

Finally, HP Advancemail enables users of the HP Vectra, HP Touchscreen, HP Portable Plus and IBM Personal Computers to exchange messages and documents with users of HP Deskmanager. HP claimed that by allowing such integration of electronic mail, HP Advancemail increases the number of workstations a system can support.

HP Advancemail costs $395 for the Vectra, Touchscreen PC and the IBM PC, PC AT and XT. Advancemail for the HP Portable Plus machine is $495.

For further information, contact Hewlett-Packard Co., 3000 Hanover St., Palo Alto, Calif. 94304.

Circle Reader Service Number 283

IBM Unveils Faster Version Of PC XT

MONTVALE, N.J. — IBM has introduced its Personal Computer XT Model 286, a faster, more powerful version of its Personal Computer XT.

The Model 286, based on Intel Corp.'s 80286 processor, comes with 640K bytes of random-access memory, memory expansion options to increase memory to 12.6M bytes, a 1.2M-byte diskette drive and a 20M-byte fixed disk. An optional second diskette drive can support either a 3½-in., 720K-byte internal diskette drive; a 5¼-in., 1.2M-byte diskette drive; or a 5¼-in., 360K-byte diskette drive.

In protected virtual mode, the PC XT Model 286 can address up to 16M bytes of real memory and 1G byte of virtual memory. IBM claimed that the PC XT Model 286 can operate up to three times the speed of earlier PC XT models.

IBM added that the Model 286 also supports the IBM PC 3½-in. external diskette drive, enabling users to exchange data between the Model 286 and the IBM PC Convertible.

IBM also introduced Sy-Tos Tape Utilities, a software package to facilitate tape backup for IBM's line of Personal Computers. Sy-Tos was designed to work with the IBM 6157 streaming tape drive.

The PC XT Model 286 costs $3,995. The Sy-Tos Tape Utilities costs $70.

The PC XT 286 is said to be three times faster than other XT models.

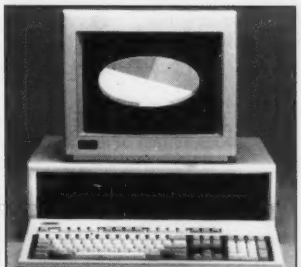
For further information, contact IBM, 900 King St., Rye Brook, N.Y. 10573.

Circle Reader Service Number 284

Compaq Offers 386-Based PC; Adds Model To Deskpro Line

HOUSTON — Compaq Computer Corp. introduced the Compaq Deskpro 386, a color monitor and an enhanced graphics board. The micro vendor also added a new model to its Deskpro 286 line.

The Deskpro personal computer, based on the Intel Corp. 80386 chip, reportedly runs two to three times faster than 80286-based micros such as the IBM Personal Computer AT. At the same time it remains fully compatible and can run hardware add-ons and peripheral devices as well as applications designed for 286-based systems.



Compaq is touting its Deskpro 386 both as a PC and LAN file server.

Compaq is offering two versions of the Deskpro 386, Models 40 and 130. Both systems come with 1M byte of random-access memory (RAM); a half-height, 1.2M-byte diskette drive; Compaq Extended Memory Manager and Enhanced Keyboard. The Model 40 comes with a 40M-byte fixed disk drive and costs $6,499. Model 130 has a 130M-byte disk drive and costs $8,799.

To take advantage of the 386 power, Compaq is selling Deskpro 386 as both a PC and a local-area network (LAN) file server. In addition, users can choose between Microsoft Corp.'s MS-DOS and a version of Microsoft Xenix System V/286 published by Compaq. The company also plans to offer Xenix System V/386, which is being developed by Microsoft, in the first half of 1987.

Two options for the Desktop 386 are the Compaq Color Monitor and Compaq Enhanced Color Graphics Board.

The graphics board includes 256K bytes of display memory, which supports a 16-color display from a 64-color pallette. When used with the Deskpro 386 it offers up to twice the speed of comparable graphics boards in text screen operations, Compaq said. The board supports the Compaq Color Monitor and the Compaq Dual-Mode Monitor and costs $599.

The color monitor has a diagonal 13-in., nonglare screen and can display up to 16 colors at one time at a resolution of 640 by 350 pixels when it is used with the graphics board. It lists for $799.

Compaq has also added a new model to its Deskpro 286 line, Model 20. The personal computer has a 20M-byte fixed disk, 640K bytes of RAM and a 1.2M byte diskette drive. It sells for $3,999.

For more information, contact Compaq Computer Corp., 20555 FM149, Houston, Texas 77070.

Circle Reader Service Number 285

Novell Card Out For Servers

OREM, Utah — Novell, Inc. has introduced the Arcnet68 Network Interface card for Novell's 68B file servers and is scheduled to introduce System Fault Tolerant (SFT) Netware, a product designed to prevent data contamination or data loss in case of network component failure.

The Arcnet68 Network Interface card allows Novell's 68B file server to support more than 24 users. The card fits into one of the local-area network board slots of the 68B server, giving the server access to Novell's S-Net and Arcnet network topologies. Novell said joining the S-Net and Arcnet topologies allows the user to employ existing 3270-type cables, dual twisted-pair cables or a combination of both.

Novell's SFT Netware, Level II, slated for commercial availability in the last quarter of 1986, will run on Novell's 286A and 286B file servers. Like the Level I SFT Netware, Level II will provide a backup in case of failure in the directory area of the disk.

Level II, however, will also include the Transaction Tracking System that Novell said ensures that the system views a data base change as a single unit of work that will be wholly completed or wholly backed out.

The Arcnet68 Network Interface card costs $1,995, and SFT Netware costs $3,995.

For further information, contact Novell, Inc., 748 N. 1340 W., Orem, Utah 84057.

Circle Reader Service Number 286

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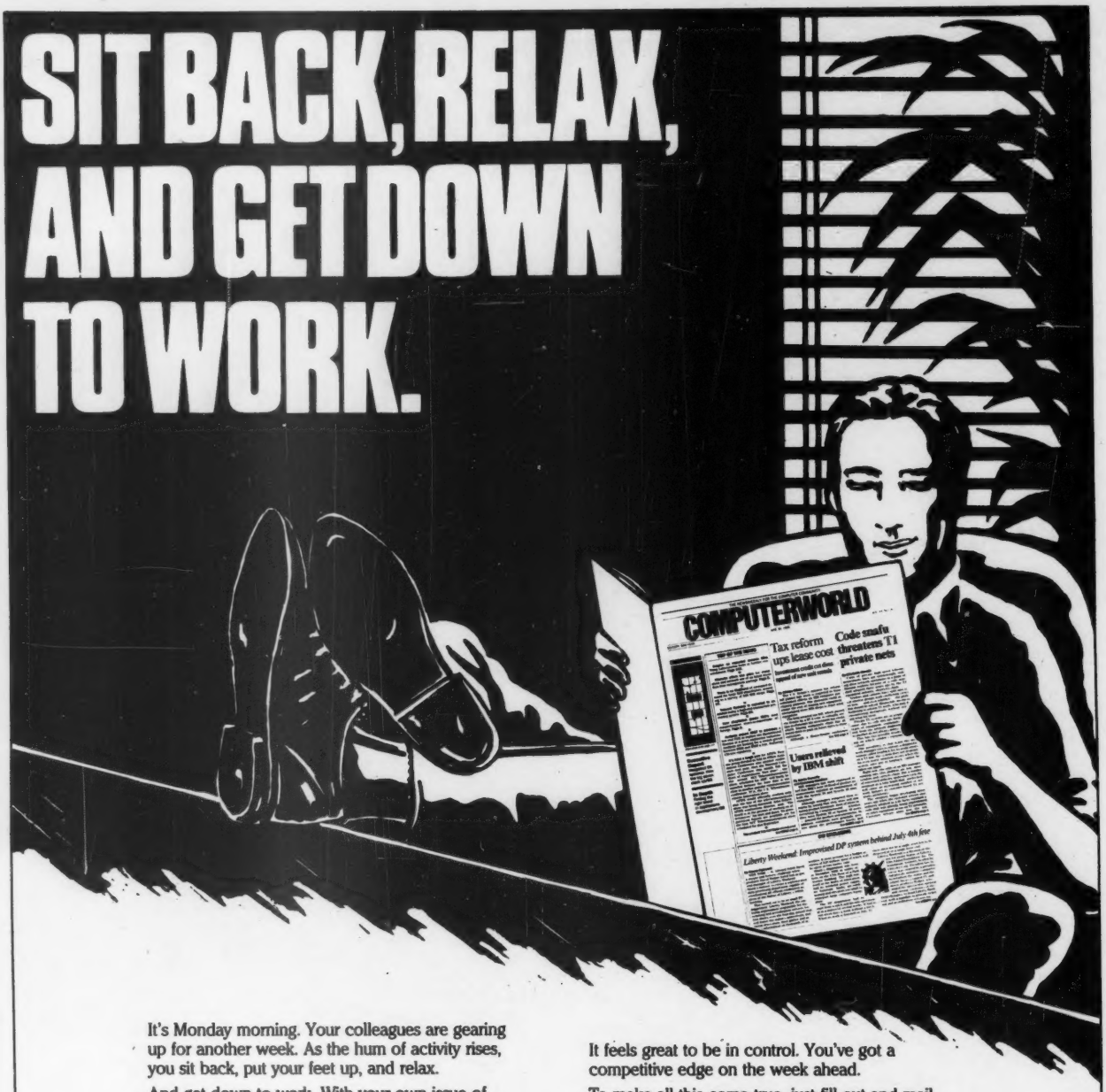
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OFFICE AUTOMATION PRODUCTS

Project Management Aid Bows

ANAHEIM, Calif. — Information Builders, Inc., based in New York, introduced its Focman project management system and announced the final module of its training series at the Third Annual Information Center Conference and Exposition held in Anaheim.

Based on the company's Focus fourth-generation data base management system, Focman provides managers with guidelines for project management. It provides the ability to define a project and analyze time and resource requirements, among other things.

Focman is menu driven, offers several keystroke functions and runs in IBM VM/CMS or MVS/TSO environments. Running under Focus Release 5.0.2 or later, the system requires the Focus Fidel Screen Manager and Data Management facilities. Focman will also support interactive color graphics with the addition of IBM's Graphical Data Display Manager.

Focman will be available in the third quarter of 1986. It will be offered on a monthly rental for $575 per month or on a perpetual license for $22,000 for both VM/CMS or MVS/TSO.

Training course complete

Information Builders has completed its Personal Computer-Based Training Portable Focus Classroom with the availability of its third course, "Maintaining Focus Files." This course, along with "Basic Report Preparation" and "Describing Files to Focus," parallels Focus' three-day, in-house training program.

All three courses are available on the IBM Personal Computer, XT, AT or compatible that runs Microsoft Corp MS-DOS or IBM PC-DOS Release 2.0 and has a minimum of 256K bytes and one disk drive.

Individual courses cost $395. The complete three-course set costs $995.

For more information, contact Information Builders, Inc., 1250 Broadway, New York, N.Y. 10001.

Circle Reader Service Number 287

Nastec Announces Designaid Release

SOUTHFIELD, Mich. — Nastec Corp. has announced Designaid 3.55, a release of its software system designed to support data modeling and real-time systems, to automate the systems development process.

According to the vendor, new features of the Designaid 3.55 software include the following:

- The ability to create, modify and maintain entity relation attribute diagrams used for data modeling.
- Enhanced analysis, validation and balancing for data flow diagrams.
- Enhanced validation reporting.
- Improved load/unload capability for Designaid files.
- Customized functions and utilities.
- Expanded printer support.

According to the company, Designaid 3.55 incorporates Nastec's Hostlink, enabling the interactive access of a project data base (text and graphics) on a host.

Runs on PCs and compatibles

Designaid 3.55 runs on all IBM Personal Computers and compatibles, Nastec claimed.

The product is priced at $6,900, the company said.

For further information, contact Nastec Corp., 24681 Northwestern Highway, Southfield, Mich. 48075.

Circle Reader Service Number 288

Index Packages Introduced

CAMBRIDGE, Mass. — Index Technology Corp. unveiled Excelerator/RTS, a design workbench for engineers, and Customizer, a tool for tailoring Excelerator products, for IBM Personal Computer XTs, ATs and compatibles.

Excelerator/RTS provides integrated graphics, analysis, reporting, documentation and screen and report design facilities for the design of real-time systems. Excelerator/RTS also provides four graph types specifically for real-time systems design.

Customizer allows organizations and value-added resellers to modify Excelerator, a conventional data processing design system, to create custom system development environments.

It provides four integrated facilities for tailoring dictionary definitions, menus and graphs.

Both Execelerator/RTS and Customizer require a PC XT, AT or compatible with a minimum of 640K bytes of memory, a high-resolution graphics board and a mouse. Excelerator/RTS is priced at $8,400 and Customizer is priced at $12,500 for single copies. Discounts are available for multiple copies. Both packages are available immediately.

For more information, contact Index Technology Corp., 101 Main St., Cambridge, Mass. 02142.

Circle Reader Service Number 289

DG Beefs Up Eclipse MV Line

WESTBORO, Mass. — Data General Corp. has added to its superminicomputer line with the introduction of the Eclipse MV/7800 computer.

The MV/7800 32-bit architecture is based on a six-member chip set consisting of four proprietary very large-scale integration NMOS circuits, a CMOS gate array and an emitter-coupled logic gate array. The MV/7800, with 4M bytes of error-correcting main memory, is implemented on a single circuit board, resulting, according to DG, in higher performance, lower cost and enhanced reliability.

The MV/7800 can be configured with up to 14M bytes of random-access memory (RAM) and provides 14 I/O slots that can support up to 9.4G bytes of disk storage and a total of 128 terminals and letter-quality printers.

DG said the MV/7800 is compatible with the company's other MV computers and Eclipse 16-bit models and offers a choice of compatible operating systems, including AOS/VS for time-sharing applications, AOS/DVS for distributed systems and DG/UX for Unix environments.

The MV/7800 is available in three models: a commercial system packaged in a one-meter-high cabinet; a 16-slot chassis for rack-mount integration; and a board-level, 32-bit upgrade for DG's Nova 4, Eclipse S/120, Eclipse S/140 and Eclipse S/280 systems.

The MV/7800 commercial system is priced at $27,550 and includes the system board with 4M bytes of RAM, a 16-slot chassis, a cabinet and AOS/VS operating system.

The 2M-byte, rack-mount model is priced at $19,050. MV/7800 upgrades range from $10,000 to $17,500.

For further information, contact Data General Corp., 4400 Computer Drive, Westboro, Mass. 01580.

Circle Reader Service Number 290

Eastcom Unwraps Syncra LAN Server

ROCHESTER, N.Y. — Eastman Communications (Eastcom), a company of Eastman Kodak Co., has introduced the Syncra LAN server, a compact control unit offering file transfer and terminal emulation.

Syncra LAN server offers a choice of remote connections or a channel speed adapter to link computers on an Ethernet local-area network (LAN) to an IBM Systems Network Architecture (SNA) mainframe.

Eastcom also announced Syncra companion software. The Syncra LAN terminal emulation packages operate on Unix-based workstations, IBM Personal Computers and compatibles and Digital Equipment Corp. VAX and Microvax systems within a DEC VMS environment.

LAN terminal emulation packages include IBM 3270 emulation (including multiple host sessions, PC file transfer support and an on-line Help facility); IBM 3770 Remote Job Entry emulation; and an application program interface that allows the incorporation of application-specific front-end processing.

Syncra LAN data transfer products operate in Digital Equipment Corp. VAX/VMS environments and provide file transfer capabilities through the Syncra LAN server to SNA mainframes equipped with Syncra communications software.

The Syncra LAN Server can support up to 64 concurrent terminal sessions, appearing as a 3274 cluster controller to the IBM VTAM mainframe communications software.

The Syncra LAN Server comes in three models. The direct channel attachment server is priced at $36,000; the high-speed remote version is priced at $32,000; and the low-speed remote version is priced at $28,000. Built-in communications software for each model is priced separately at $6,000.

For further information, contact Eastcom, 1099 Jay St., Rochester, N.Y. 14650.

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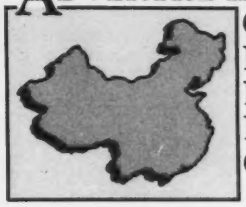

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CALENDAR

Oct. 14-15, San Francisco — **Bypass Networks.** Contact: BCR Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.

Oct. 14-17, Washington, D.C. — **National Office Automation Conference.** Contact: National Office Automation Conference, P.O. Box N, Wayland, Mass. 01778.

Oct. 15-17, Philadelphia — **Project Management Conference.** Contact: AGS Management Systems, Inc., 880 First Ave., King of Prussia, Pa. 19406.

Oct. 16-17, Dallas — **Organizing For CIM.** Contact: The Yankee Group, Seminar Division, 89 Broad St., Boston, Mass. 02110.

Oct. 20-22, Boston — **Fiber Optic Communications.** Contact: BCR Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.

Oct. 20-22, New York — **Unix Expo.** Contact: National Exposition Co., Suite 12A, 49 W. 38th St., New York, N.Y. 10018.

Oct. 20-23, Toronto — **Infomatics '86.** Contact: International Information Management Congress, P.O. Box 34404, Bethesda, Md. 20817.

Oct. 21-24, Los Angeles — **Implementing Local Area Networks.** Also being held Oct. 21-24, Boston; Nov. 4-7, Washington, D.C.; Nov. 11-14, Palo Alto, Calif.; Dec. 9-12, San Diego; Jan. 13-16, Anaheim, Calif.; Jan. 20-23, Washington, D.C. Contact: Integrated Computer Systems, P.O. Box 3614, 5800 Hannum Ave., Culver City, Calif. 90231.

Oct. 23-24, New York — **T1 Networking.** Contact: BCR Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.

Oct. 27-29, Atlanta — **DPMA International Computer Conference and Business Exposition.** Contact: Data Processing Management Association, 505 Busse Highway, Park Ridge, Ill. 60068.

Oct. 30-31, New York — **ISDN: Concepts and Applications.** Contact: BCR Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.

Nov. 3-6, Greenville, S.C. — **Automated Manufacturing Exhibition and Conference.** Contact: AM86, P.O. Box 5616, Greenville, S.C. 29606.

Nov. 4-5, New York — **Local Area Networks.** Contact: BCR Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.

Nov. 4-6, Boston — **International Electronic Imaging Exposition and Conference.** Contact: Institute for Graphic Communication, 4th Floor, .375 Commonwealth Ave., Boston, Mass. 02115.

Nov. 11-12, New York — **Communications Systems and Strategies.** Also being held Nov. 18-19, San Francisco. Contact: The Yankee Group, Seminar Division, 89 Broad St., Boston, Mass. 02110.

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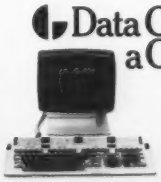

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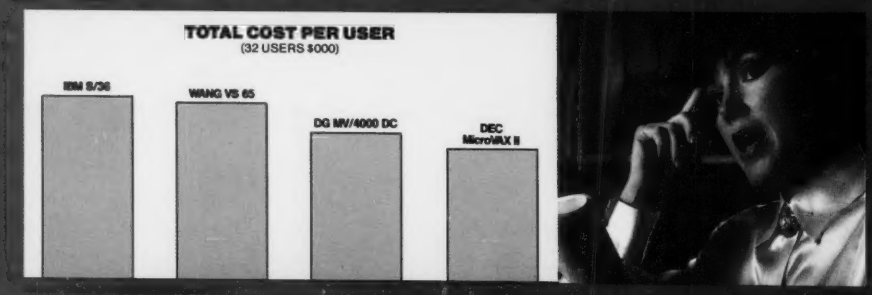

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